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F-18 CREW AUTOMATED ESCAPE SYSTEM AND ESCAPE SYSTEM REPLACEMENT PROGRAM

FINAL REPORT

VOLUME II

CDRL ITEM #A005

Task Order No. 23

Contract N62269-78-C-0191

Prepared for

NAVAL AIR DEVELOPMENT CENTER

Warminster, Pennsylvania

October 1979

CSC

COMPUTER SCIENCES CORPORATION

APPENDIX E

TABLES OF PREDICTED AND ACTUAL NWC SNORT F-18A SLED TEST DATA AT EJECTION TRAJECTORY EVENTS

ICARUS PROGRAM VALIDATION STUDY

PREDICTED F-18A NWC SLED TEST RESULTS

ROCKET IGNITION

PARAMETER	UNITS	TEST 1	TEST 2	TEST 6	TEST 8	TEST 3	TEST 4	TEST 5	TEST 7
V_{target}	KEAS	0	225	435	600	0	225	435	600
Percentile	%	98	98	98	98	3	3	3	3
V_{test}	Ft./Sec.	0	377	735	1000	0	387	755	1011
t	Sec.	0.527	0.524	0.547	0.547	0.522	0.504	0.513	0.523
X	Ft.	-2.1	195.5	399.8	544.8	-2.3	192.8	384.6	525.7
Y	Ft.	6.6	5.7	4.7	4.1	7.1	6.1	5.1	4.4
Z	Ft.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
V_x	Ft./Sec.	-17.0	359.7	716.7	979.9	-18.5	367.5	732.2	983.7
V_y	Ft./Sec.	54.3	51.4	47.7	44.6	61.4	58.4	55.0	53.0
V_z	Ft./Sec.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE E-2

ICARUS PROGRAM VALIDATION STUDY

PREDICTED F-18A NWC SLED TEST RESULTS

ROCKET BURNOUT

PARAMETER	UNITS	TEST 1	TEST 2	TEST 6	TEST 8	TEST 3	TEST 4	TEST 5	TEST 7
V_{target}	KEAS	0	225	435	600	0	225	435	600
Percentile	%	98	98	98	98	3	3	3	3
V_{test}	Ft./Sec.	0	377	735	1000	0	387	755	1011
t	Sec.	0.787	0.784	0.817	0.821	0.782	0.763	0.783	0.795
X	Ft.	-3.7	288.9	585.7	796.4	-6.6	284.9	569.7	771.4
Y	Ft.	30.6	28.5	25.8	21.5	35.9	32.9	28.7	24.9
Z	Ft.	-2.1	-2.0	-2.0	-1.9	-3.2	-3.0	-2.9	-2.5
V_x	Ft./Sec.	12.2	365.7	670.3	871.4	-13.9	345.5	644.4	830.4
V_y	Ft./Sec.	117.3	113.8	103.4	87.8	147.3	136.0	109.4	91.7
V_z	Ft./Sec.	-19.6	-18.5	-17.9	-18.1	-30.9	-28.6	-24.9	-22.9

TABLE E-3

ICARUS PROGRAM VALIDATION STUDY

PREDICTED F-18A NWC SLED TEST RESULTS

DROGUE GUN FIRE

PARAMETER	UNITS	TEST 1	TEST 2	TEST 6	TEST 8	TEST 3	TEST 4	TEST 5	TEST 7
V_{target}	KEAS	0	225	435	600	0	225	435	600
Percentile	%	98	98	98	98	3	3	3	3
V_{test}	Ft./Sec.	0	377	735	1000	0	387	755	1011
t	Sec.	0.901	0.901	0.949	0.941	0.937	0.904	0.919	0.939
X	Ft.	-2.4	331.0	672.4	898.5	-8.8	332.7	654.7	886.7
Y	Ft.	43.6	41.4	39.3	32.0	58.2	51.3	43.1	37.9
Z	Ft.	-4.2	-4.1	-4.7	-4.8	-7.9	-6.6	-6.1	-6.8
V_x	Ft./Sec.	12.3	357.8	644.3	834.0	-14.1	334.2	605.3	772.7
V_y	Ft./Sec.	113.2	108.9	100.6	85.4	139.8	126.0	102.6	86.0
V_z	Ft./Sec.	-19.7	-20.5	-24.8	-31.4	-30.9	-24.2	-25.0	-38.5

TABLE E-4

ICARUS PROGRAM VALIDATION STUDY

PREDICTED F-18A NWC SLED TEST RESULTS

DROGUE PARACHUTE FULL INFLATION

PARAMETER	UNITS	TEST 1	TEST 2	TEST 6	TEST 8	TEST 3	TEST 4	TEST 5	TEST 7
V_{target}	KEAS	0	225	435	600	0	225	435	600
Percentile	%	98	98	98	98	3	3	3	3
V_{test}	Ft./Sec.	0	377	735	1000	0	387	755	1011
t	Sec.	1.610	1.600	1.335	1.441	1.570	1.330	1.312	1.290
X	Ft.	6.3	558.0	900.4	1259.7	-17.4	465.9	868.7	1128.1
Y	Ft.	113.5	103.6	71.8	61.6	136.6	99.3	77.2	61.0
Z	Ft.	-18.1	-18.3	-14.8	-20.3	-26.6	-14.6	-17.2	-19.3
V_x	Ft./Sec.	11.8	288.1	528.3	599.5	-13.1	286.6	474.9	591.8
V_y	Ft./Sec.	83.5	69.7	68.2	42.9	107.5	97.5	70.2	50.5
V_z	Ft./Sec.	-19.1	-18.0	-24.3	-25.4	-27.8	-15.0	-24.1	-31.1

TABLE E-5

ICARUS PROGRAM VALIDATION STUDY

PREDICTED F-18A NWC SLED TEST RESULTS

MAIN PARACHUTE PACK OPENING

PARAMETER	UNITS	TEST 1	TEST 2	TEST 6	TEST 8	TEST 3	TEST 4	TEST 5	TEST 7
V_{target}	KEAS	0	225	435	600	0	225	435	600
Percentile	%	98	98	98	98	3	3	3	3
V_{test}	Ft./Sec.	0	377	735	1000	0	387	755	1011
t	Sec.	1.871	1.905	2.059	2.027	1.990	2.071	3.826	1.902
X	Ft.	9.3	640.7	1207.5	1544.9	-22.6	645.6	1516.2	1407.7
Y	Ft.	133.8	122.3	105.9	77.5	177.3	153.2	105.1	81.7
Z	Ft.	-23.1	-23.4	-28.3	-32.5	-37.8	-23.9	-58.8	-34.3
V_x	Ft./Sec.	11.3	254.8	346.4	400.6	-11.6	207.7	156.2	361.5
V_y	Ft./Sec.	72.2	53.9	26.3	14.6	86.7	51.5	-29.0	19.1
V_z	Ft./Sec.	-18.4	-14.5	-16.0	-18.9	-26.0	-11.0	-10.6	-18.0

TABLE E-6

ICARUS PROGRAM VALIDATION STUDY

PREDICTED F-18A NWC SLED TEST RESULTS

MAIN PARACHUTE RISER LINE STRETCH

PARAMETER	UNITS	TEST 1	TEST 2	TEST 6	TEST 8	TEST 3	TEST 4	TEST 5	TEST 7
V_{target}	KEAS	0	225	435	600	0	225	435	600
Percentile	%	98	98	98	98	3	3	3	3
V_{test}	Ft./Sec.	0	377	735	1000	0	387	755	1011
t	Sec.	2.964	2.314	2.374	2.316	3.590	2.541	4.460	2.172
X	Ft.	21.5	742.0	1315.0	1658.7	-40.3	741.2	1613.5	1503.2
Y	Ft.	192.1	142.1	112.5	80.4	270.2	173.6	80.9	85.5
Z	Ft.	-42.8	-28.9	-33.2	-37.8	-77.9	-29.3	-65.4	-39.3
V_x	Ft./Sec.	10.6	240.5	336.0	385.4	-10.8	198.1	150.5	342.9
V_y	Ft./Sec.	35.0	41.1	16.0	6.6	30.7	35.1	-47.0	7.8
V_z	Ft./Sec.	-17.8	-13.3	-15.4	-16.3	-24.1	-12.1	-10.6	-19.4

TABLE E-7

ICARUS PROGRAM VALIDATION STUDY

PREDICTED F-18A NWC SLED TEST RESULTS

MAIN PARACHUTE FULL INFLATION

PARAMETER	UNITS	TEST 1	TEST 2	TEST 6	TEST 8	TEST 3	TEST 4	TEST 5	TEST 7
V_{target}	KEAS	0	225	435	600	0	225	435	600
Percentile	%	98	98	98	98	3	3	3	3
V_{test}	Ft./Sec.	0	377	735	1000	0	387	755	1011
t	Sec.	5.700	3.900	2.909	2.801	5.200	(3.280) 3.330*	5.235	2.720
X	Ft.	46.2	971.8	1446.3	1797.2	-50.4	(838.6)	1688.9	1621.6
Y	Ft.	159.5	153.3	116.5	80.0	267.6	(183.2)	48.7	84.1
Z	Ft.	-78.6	-40.8	-39.0	-43.1	-110.1	(-36.8)	-70.1	-47.2
V_x	Ft./Sec.	1.3	43.0	146.0	162.1	-1.6	(58.3)	37.6	92.7
V_y	Ft./Sec.	-39.7	-17.4	-2.3	-7.8	-30.4	(-5.8)	-29.4	-9.8
V_z	Ft./Sec.	-0.6	-2.1	-6.4	-5.9	-11.6	(-5.7)	-1.5	-5.8

*Predicted data not available for this time.

TABLE 3

ICARUS PROGRAM VALIDATION STUDY

PREDICTED F-18A NWC SLED TEST RESULTS

PEAK TRAJECTORY HEIGHT

PARAMETER	UNITS	TEST 1	TEST 2	TEST 6	TEST 8	TEST 3	TEST 4	TEST 5	TEST 7
V_{target}	KEAS	0	225	435	600	0	225	435	600
Percentile	%	98	98	98	98	3	3	3	3
V_{test}	Ft./Sec.	0	377	735	1000	0	387	755	1011
t	Sec.	3.900	3.210	2.810	2.490	4.380	3.180	2.751	2.380
X	Ft.	31.7	915.0	1430.0	1720.0	-46.7	831.8	1318.7	1565.7
Y	Ft.	208.2	160.1	116.6	81.2	281.2	183.6	121.5	86.1
Z	Ft.	-58.4	-37.9	-38.2	-40.2	-95.6	-36.0	-45.3	-43.4
V_x	Ft./Sec.	10.8	133.4	183.1	320.3	-6.2	78.1	218.2	260.9
V_y	Ft./Sec.	0.1	0.6	1.5	-0.3	-1.7	-1.7	0.1	1.7
V_z	Ft./Sec.	-15.7	-5.6	-8.5	-13.4	-21.0	-9.2	-15.0	-17.2

TABLE E-9

ICARUS PROGRAM VALIDATION STUDY
ACTUAL F-18A NWC SLED TEST RESULTS
ROCKET IGNITION

PARAMETER	UNITS	TEST 1	TEST 2	TEST 6	TEST 8	TEST 3	TEST 4	TEST 5	TEST 7
V_{target}	KEAS	0	225	435	600	0	225	435	600
Percentile	%	98	98	98	98	3	3	3	3
V_{test}	Ft./Sec.	0	377	735	1000	0	387	755	1011
t	Sec.	0.551	0.544	0.560	0.558	0.544	0.525	0.521	0.524
X	Ft.	-1.7	220.3	444.5	590.5	-1.6	N/A	441.1	567.4
Y	Ft.	7.0	5.5	3.9	1.9	7.6	N/A	5.1	2.0
Z	Ft.	0.3	-0.7	0.2	0.0	-0.1	N/A	0.4	0.2
V_x	Ft./Sec.	-10.0	362.0	706.0	944.0	-4.0	N/A	707.0	959.0
V_y	Ft./Sec.	60.0	49.0	42.0	29.0	64.0	N/A	54.0	37.0
V_z	Ft./Sec.	-4.0	-1.0	-5.0	-7.0	-7.0	N/A	-5.0	-2.0

TABLE E-10

ICARUS PROGRAM VALIDATION STUDY

ACTUAL F-18A NWC SLED TEST RESULTS

ROCKET BURNOUT

PARAMETER	UNITS	TEST 1	TEST 2	TEST 6	TEST 8	TEST 3	TEST 4	TEST 5	TEST 7
V_{target}	KEAS	0	225	435	600	0	225	435	600
Percentile	%	98	98	98	98	3	3	3	3
V_{test}	Ft./Sec.	0	377	735	1000	0	387	755	1011
t	Sec.	0.811	0.804	0.830	0.832	0.804	0.784	0.776	0.796
X	Ft.	-2.5	321.3	639.4	841.7	-4.1	N/A	616.8	821.5
Y	Ft.	32.0	28.3	22.6	12.3	37.2	N/A	27.9	19.1
Z	Ft.	-2.2	-4.2	-4.6	-3.9	-3.9	N/A	-0.5	-1.4
V_x	Ft./Sec.	11.0	353.0	606.0	776.0	2.0	N/A	623.0	787.0
V_y	Ft./Sec.	107.0	106.0	80.0	33.0	136.0	N/A	107.0	75.0
V_z	Ft./Sec.	-18.0	-28.0	-31.0	-13.0	-35.0	N/A	-23.0	10.0

TABLE 11

ICARUS PROGRAM VALIDATION STUDY
ACTUAL F-18A NWC SLED TEST RESULTS
DROGUE GUN FIRE

PARAMETER	UNITS	TEST 1	TEST 2	TEST 6	TEST 8	TEST 3	TEST 4	TEST 5	TEST 7
V_{target}	KEAS	0	225	435	600	0	225	435	600
Percentile	%	98	98	98	98	3	3	3	3
V_{test}	Ft./Sec.	0	377	735	1000	0	387	755	1011
t	Sec.	0.901	0.901	0.949	0.940	0.937	0.904	0.919	0.939
X	Ft.	-1.3	358.1	713.8	926.5	-5.0	N/A	711.8	938.3
Y	Ft.	43.0	40.0	33.4	15.7	57.7	N/A	45.1	32.1
Z	Ft.	-4.0	-7.9	-8.5	-5.0	-8.9	N/A	-4.7	1.5
V_x	Ft./Sec.	14.0	346.0	576.0	726.0	0.0	N/A	590.0	730.0
V_y	Ft./Sec.	109.0	110.0	76.0	27.0	138.0	N/A	105.0	86.0
V_z	Ft./Sec.	-24.0	-33.0	-33.0	-8.0	-40.0	N/A	-35.0	28.0

TABLE E-12

ICARUS PROGRAM VALIDATION STUDY

ACTUAL F-18A NWC SLED TEST RESULTS

DROGUE PARACHUTE FULL INFLATION

PARAMETER	UNITS	TEST 1	TEST 2	TEST 6	TEST 8	TEST 3	TEST 4	TEST 5	TEST 7
V_{target}	KEAS	0	225	435	600	0	225	435	600
Percentile	%	98	98	98	98	3	3	3	3
V_{test}	Ft./Sec.	0	377	735	1000	0	387	755	1011
t	Sec.	1.610	1.600	1.335	1.440	1.570	1.330	1.312	1.290
X	Ft.	13.0	592.4	935.0	1261.7	-10.9	N/A	941.7	1185.6
Y	Ft.	115.0	106.1	58.2	26.8	140.2	107.2	80.2	58.6
Z	Ft.	-21.0	-29.1	-21.5	-8.5	-32.4	-21.5	-15.2	12.1
V_x	Ft./Sec.	18.0	269.0	480.0	533.0	0.0	278.0	468.0	581.0
V_y	Ft./Sec.	81.0	67.0	43.0	12.0	107.0	101.0	69.0	53.0
V_z	Ft./Sec.	-23.0	-24.0	-35.0	-9.0	-35.0	-29.0	-26.0	22.0

ICARUS PROGRAM VALIDATION STUDY
ACTUAL F-18A NWC SLED TEST RESULTS
MAIN PARACHUTE PACK OPENING

PARAMETER	UNITS	TEST 1	TEST 2	TEST 6	TEST 8	TEST 3	TEST 4	TEST 5	TEST 7
V_{target}	KEAS	0	225	435	600	0	225	435	600
Percentile	%	98	98	98	98	3	3	3	3
V_{test}	Ft./Sec.	0	377	735	1000	0	387	755	1011
t	Sec.	1.871	1.905	2.058	2.026	1.990	2.071	3.826	1.902
X	Ft.	16.9	676.7	1243.0	1538.2	-14.8	N/A	N/A	1483.5
Y	Ft.	136.0	125.3	79.8	28.6	182.7	165.5	N/A	79.4
Z	Ft.	-26.9	-36.8	-45.4	-12.5	-45.2	-40.5	N/A	21.7
V_x	Ft./Sec.	13.0	240.0	329.0	377.0	1.0	200.0	N/A	361.0
V_y	Ft./Sec.	69.0	51.0	14.0	-6.0	82.0	52.0	N/A	18.0
V_z	Ft./Sec.	-23.0	-21.0	-25.0	-4.0	-32.0	-21.0	N/A	10.0

TABLE 14

ICARUS PROGRAM VALIDATION STUDY
ACTUAL F-18A NWC SLED TEST RESULTS
MAIN PARACHUTE RISER LINE STRETCH

PARAMETER	UNITS	TEST 1	TEST 2	TEST 6	TEST 8	TEST 3	TEST 4	TEST 5	TEST 7
V_{target}	KEAS	0	225	435	600	0	225	435	600
Percentile	%	98	98	98	98	3	3	3	3
V_{test}	Ft./Sec.	0	377	735	1000	0	387	755	1011
t	Sec.	2.964	2.314	2.373	2.315	3.590	2.541	4.460	2.172
X	Ft.	33.8	780.5	1350.9	1649.6	-23.8	N/A	N/A	1585.1
Y	Ft.	195.9	144.8	82.4	25.4	264.9	N/A	N/A	83.7
Z	Ft.	-51.1	-45.7	-53.4	-13.3	-85.7	N/A	N/A	24.4
V_x	Ft./Sec.	15.0	219.0	303.0	337.0	5.0	N/A	N/A	328.0
V_y	Ft./Sec.	34.0	37.0	-2.0	-13.0	23.0	N/A	N/A	12.0
V_z	Ft./Sec.	-20.0	-21.0	-22.0	-3.0	-26.0	N/A	N/A	7.0

TABLE F-15

ICARUS PROGRAM VALIDATION STUDY
ACTUAL F-18A NWC SLED TEST RESULTS
MAIN PARACHUTE FULL INFLATION

PARAMETER	UNITS	TEST 1	TEST 2	TEST 6	TEST 8	TEST 3	TEST 4	TEST 5	TEST 7
V_{target}	KEAS	0	225	435	600	0	225	435	600
Percentile	%	98	98	98	98	3	3	3	3
V_{test}	Ft./Sec.	0	377	735	1000	0	387	755	1011
t	Sec.	5.700	3.900	2.908	2.800	5.200	3.330	5.235	2.720
X	Ft.	68.4	916.7	1484.2	1775.0	-25.7	N/A	N/A	1714.4
Y	Ft.	171.3	150.9	79.2	18.9	261.0	N/A	N/A	81.1
Z	Ft.	-94.7	-56.0	-66.2	-13.7	-109.7	N/A	N/A	26.1
V_x	Ft./Sec.	2.0	-4.0	120.0	111.0	10.0	N/A	N/A	97.0
V_y	Ft./Sec.	-37.0	-14.0	-13.0	-13.0	-23.0	N/A	N/A	-8.0
V_z	Ft./Sec.	0.0	7.0	-21.0	-3.0	-6.0	N/A	N/A	5.0

TABLE 10

ICARUS PROGRAM VALIDATION STUDY
ACTUAL F-18A NWC SLED TEST RESULTS
PEAK TRAJECTORY HEIGHT

PARAMETER	UNITS	TEST 1	TEST 2	TEST 6	TEST 8	TEST 3	TEST 4	TEST 5	TEST 7
V_{target}	KEAS	0	225	435	600	0	225	435	600
Percentile	%	98	98	98	98	3	3	3	3
V_{test}	Ft./Sec.	0	377	735	1000	0	387	755	1011
t	Sec.	3.979	2.925	2.349	1.860	4.255	N/A	2.821	2.300
X	Ft.	49.3	892.9	1343.1	1468.8	-25.6	N/A	1457.7	1630.0
Y	Ft.	214.7	158.9	82.5	29.2	273.7	N/A	125.1	84.5
Z	Ft.	-71.2	-56.1	-53.5	-11.4	-99.7	N/A	-35.6	24.9
V_x	Ft./Sec.	15.0	81.0	307.0	410.0	6.0	N/A	210.0	282
V_y	Ft./Sec.	-1.0	1.0	0.0	0.0	1.0	N/A	0.0	0.0
V_z	Ft./Sec.	-21.0	-6.0	-23.0	-3.0	-21.0	N/A	-12.0	3.0

APPENDIX F

GRAPHS COMPARING PREDICTED AND ACTUAL NWC SNORT

F-18A SLED TEST DATA AT EJECTION TRAJECTORY EVENTS

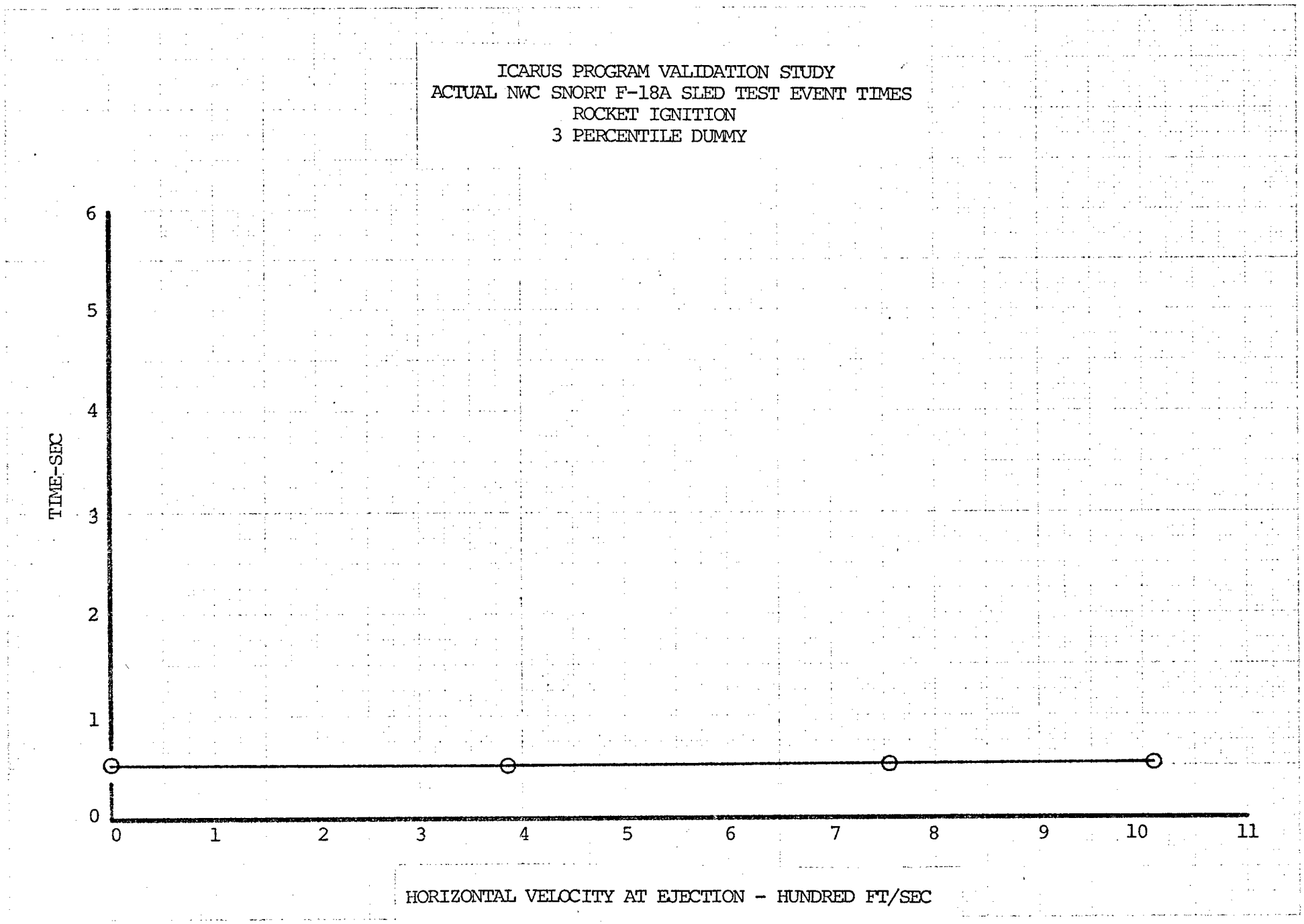

ICARUS PROGRAM VALIDATION STUDY
ACTUAL NWC SNORT F-18A SLED TEST EVENT TIMES
ROCKET IGNITION
3 PERCENTILE DUMMY
TIME-SEC
0
1
2
3
4
5
6
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-1

ICARUS PROGRAM VALIDATION STUDY
ACTUAL NWC SNORT F-18A SLED TEST EVENT TIMES
ROCKET BURNOUT
3 PERCENTILE DUMMY

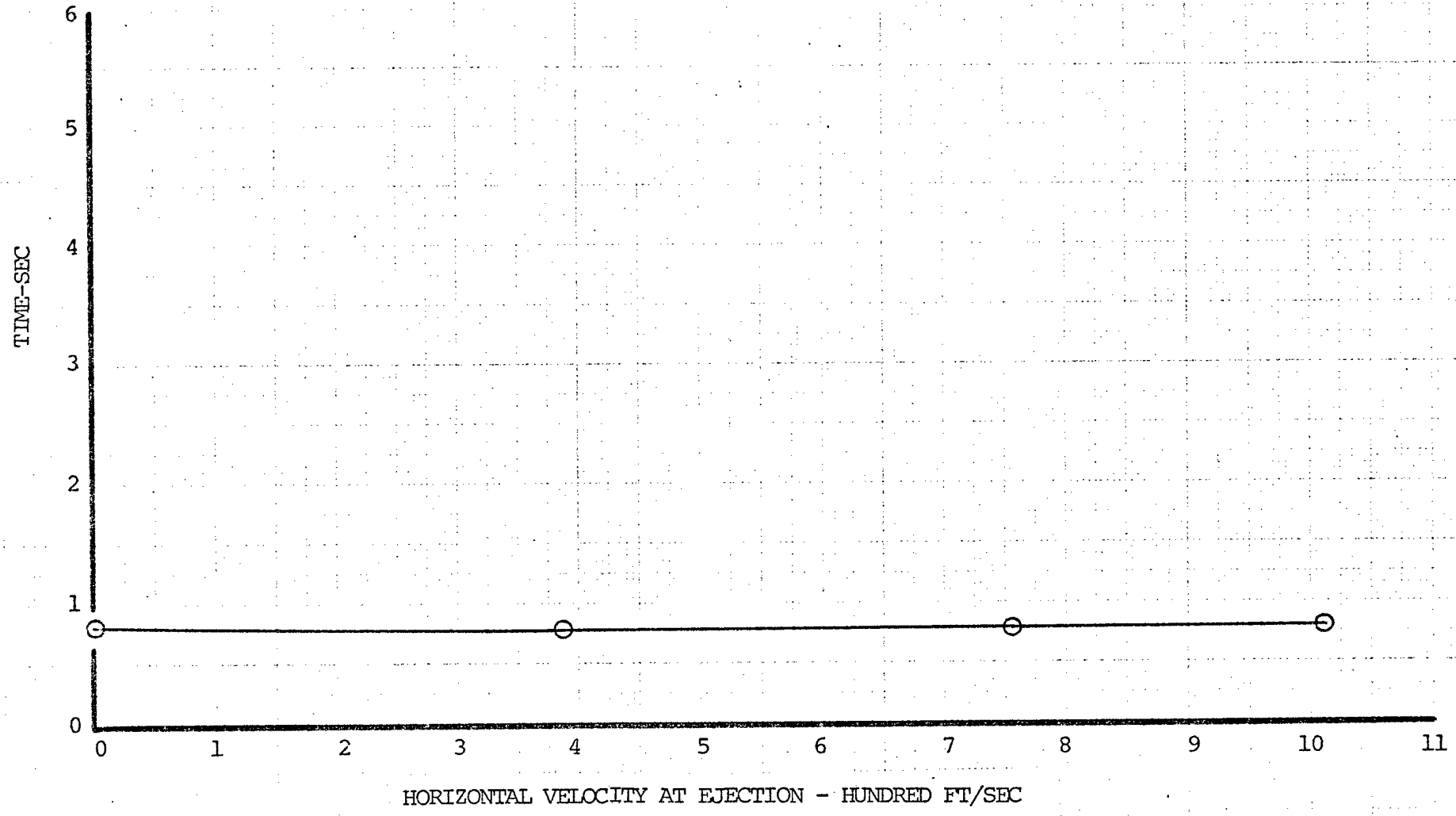


FIGURE F-2

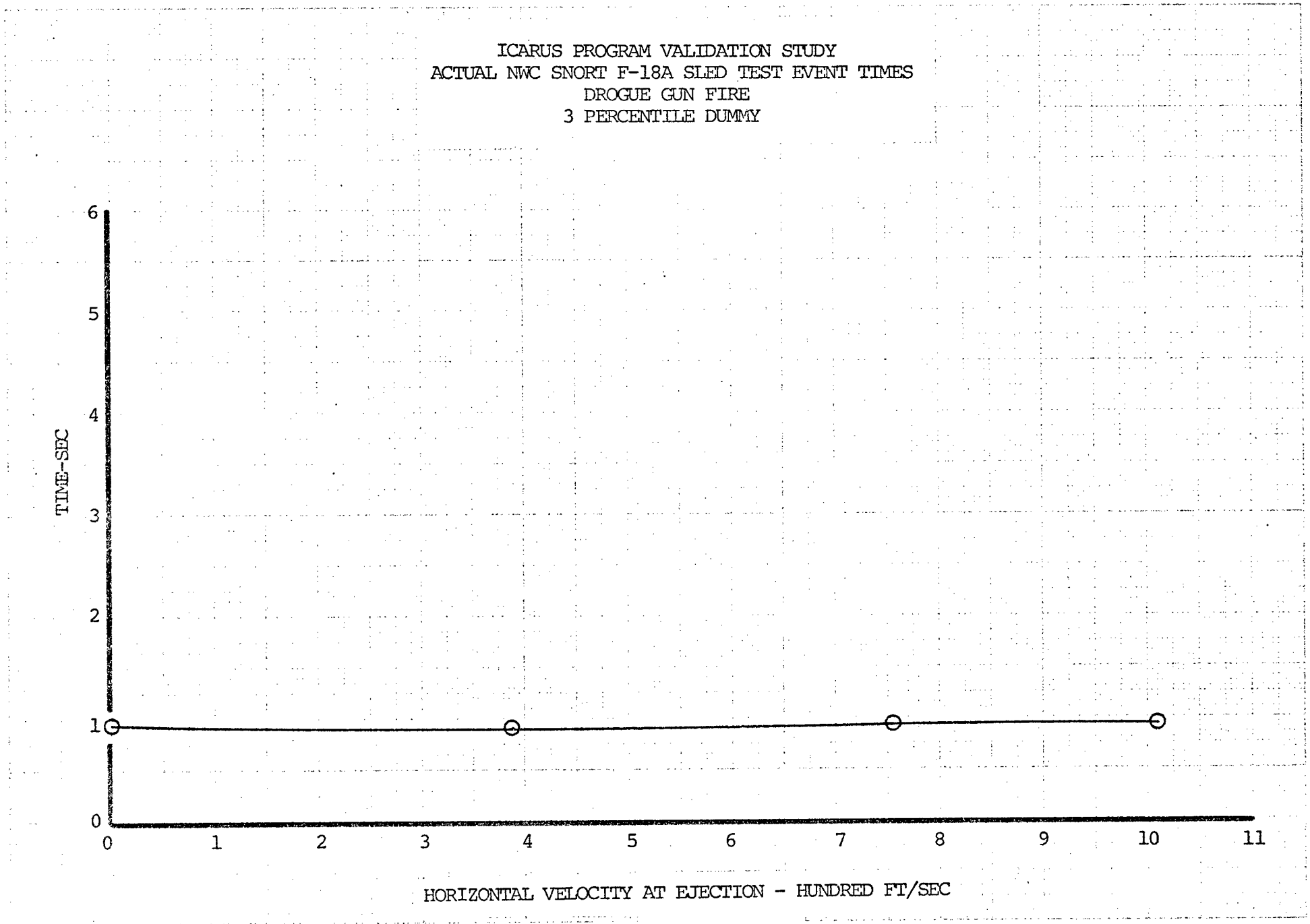

ICARUS PROGRAM VALIDATION STUDY
ACTUAL NWC SNORT F-18A SLED TEST EVENT TIMES
DROGUE GUN FIRE
3 PERCENTILE DUMMY
TIME-SEC
0
1
2
3
4
5
6
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-3

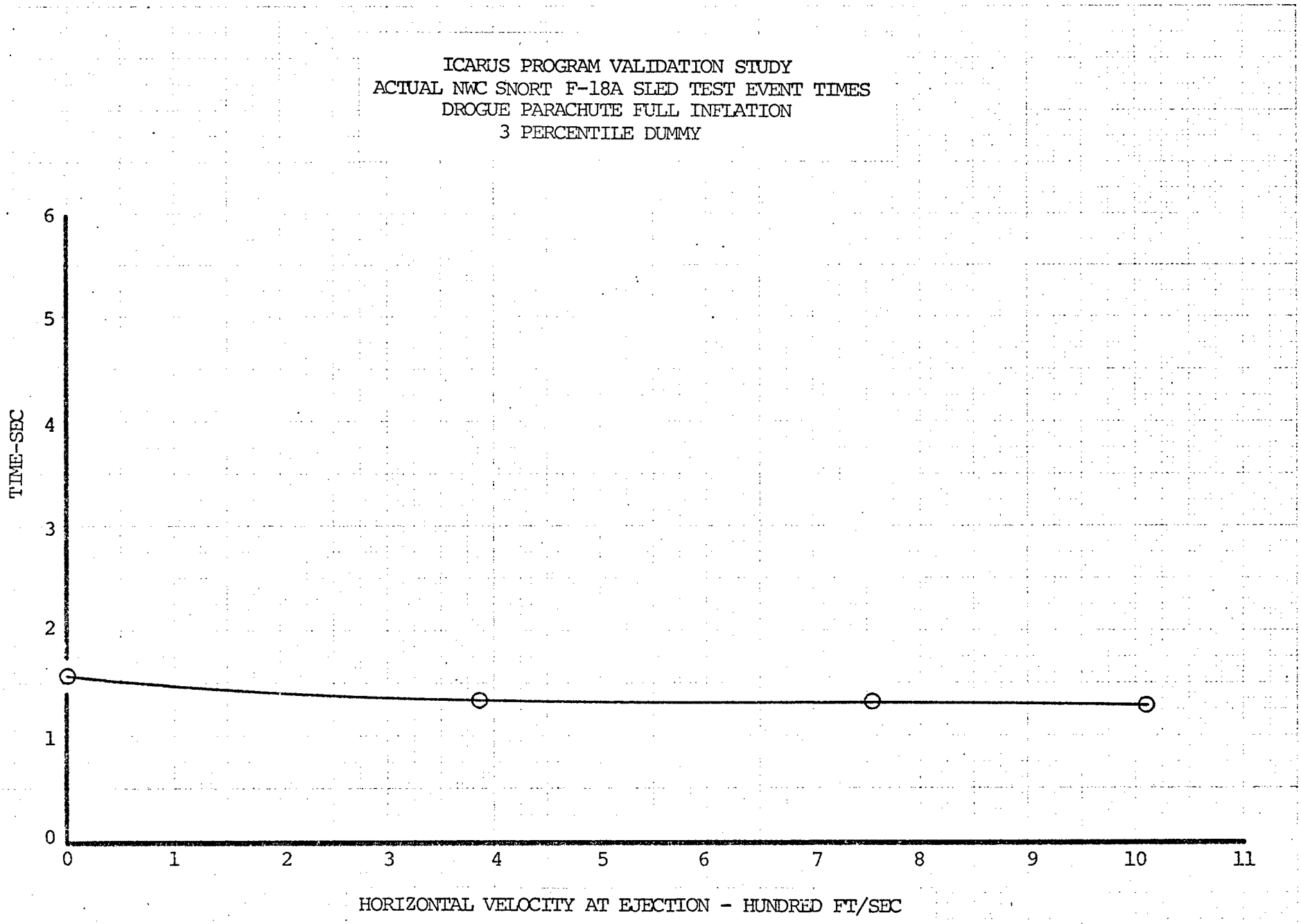

ICARUS PROGRAM VALIDATION STUDY
ACTUAL NWC SNORT F-18A SLED TEST EVENT TIMES
DROGUE PARACHUTE FULL INFLATION
3 PERCENTILE DUMMY
TIME-SEC
0
1
2
3
4
5
6
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-4

ICARUS PROGRAM VALIDATION STUDY
ACTUAL NWC SNORT F-18A SLED TEST EVENT TIMES
MAIN PARACHUTE PACK OPENING
3 PERCENTILE DUMMY

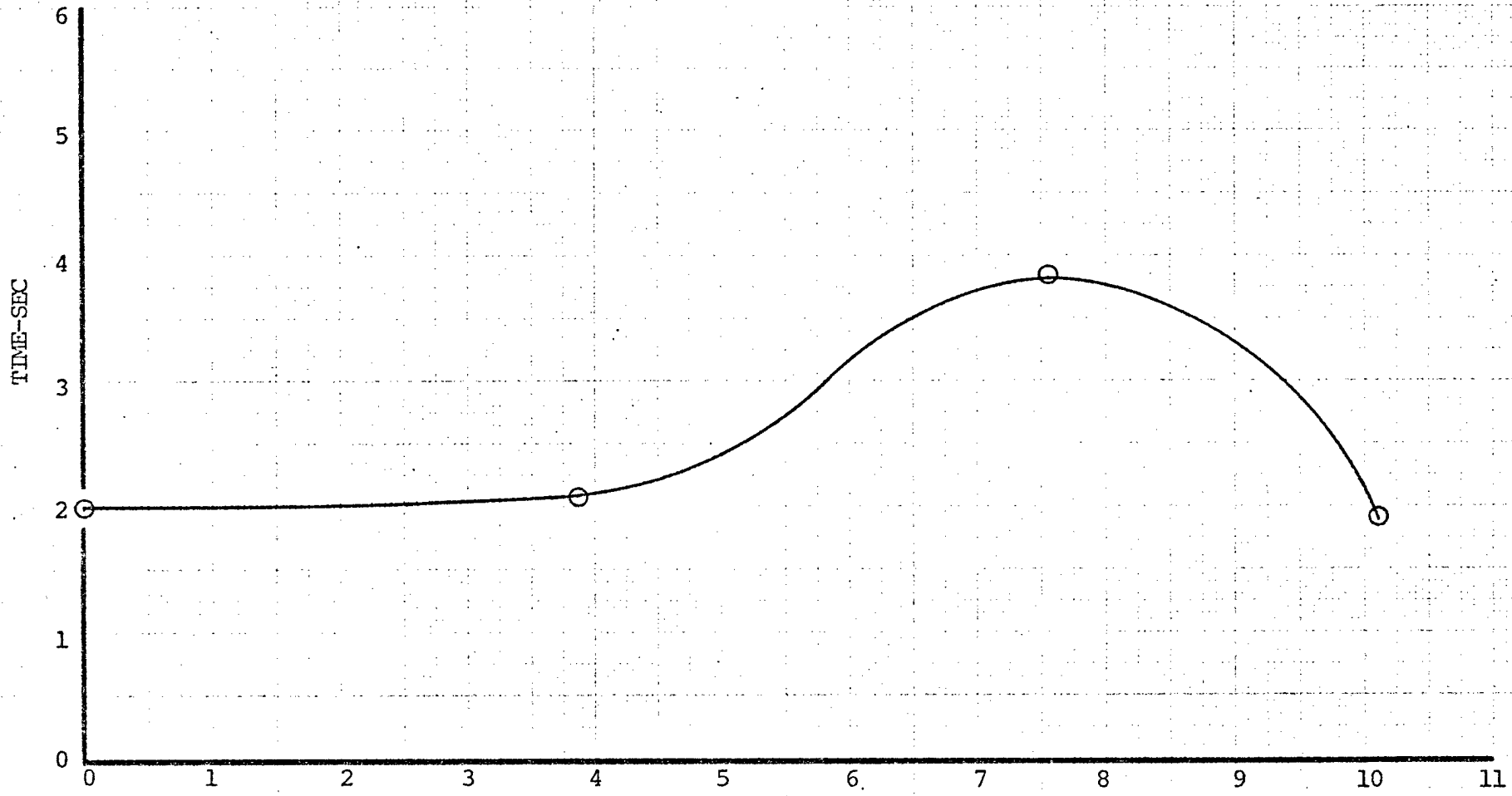


FIGURE F-5

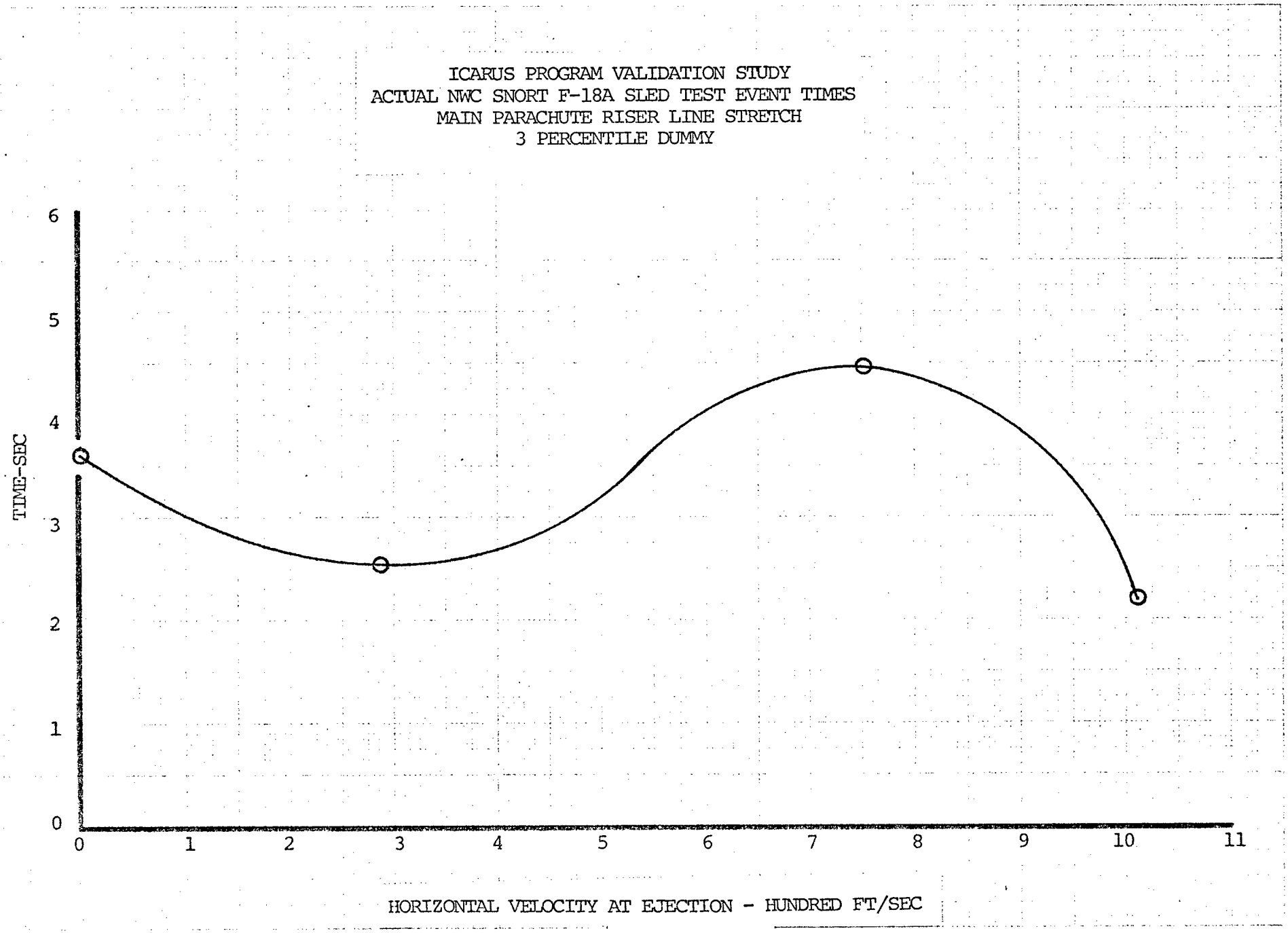

ICARUS PROGRAM VALIDATION STUDY
ACTUAL NWC SNORT F-18A SLED TEST EVENT TIMES
MAIN PARACHUTE RISER LINE STRETCH
3 PERCENTILE DUMMY
TIME-SEC
0
1
2
3
4
5
6
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-6

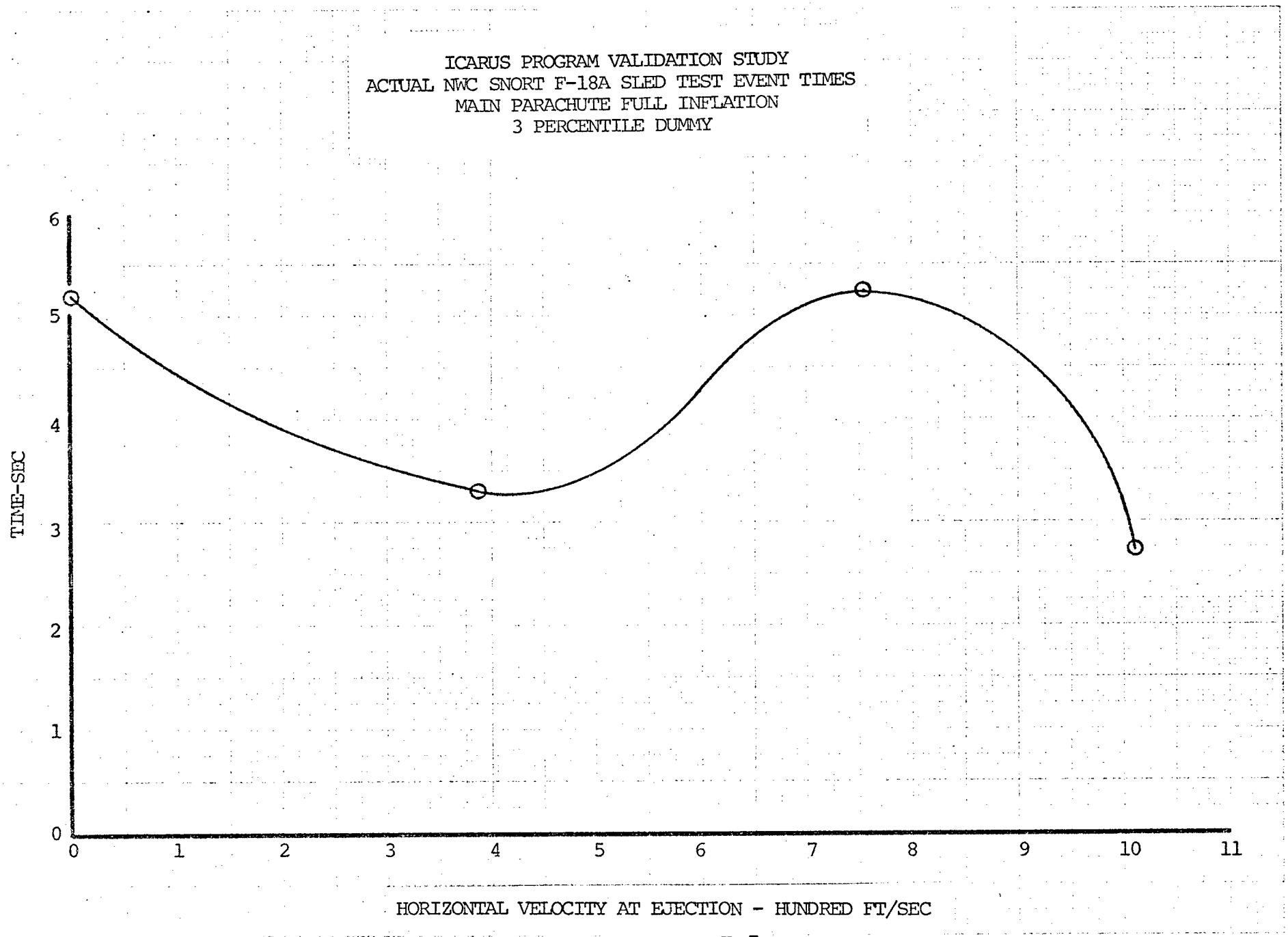

ICARUS PROGRAM VALIDATION STUDY
ACTUAL NWC SNORT F-18A SLED TEST EVENT TIMES
MAIN PARACHUTE FULL INFLATION
3 PERCENTILE DUMMY
TIME-SEC
0
1
2
3
4
5
6
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-7

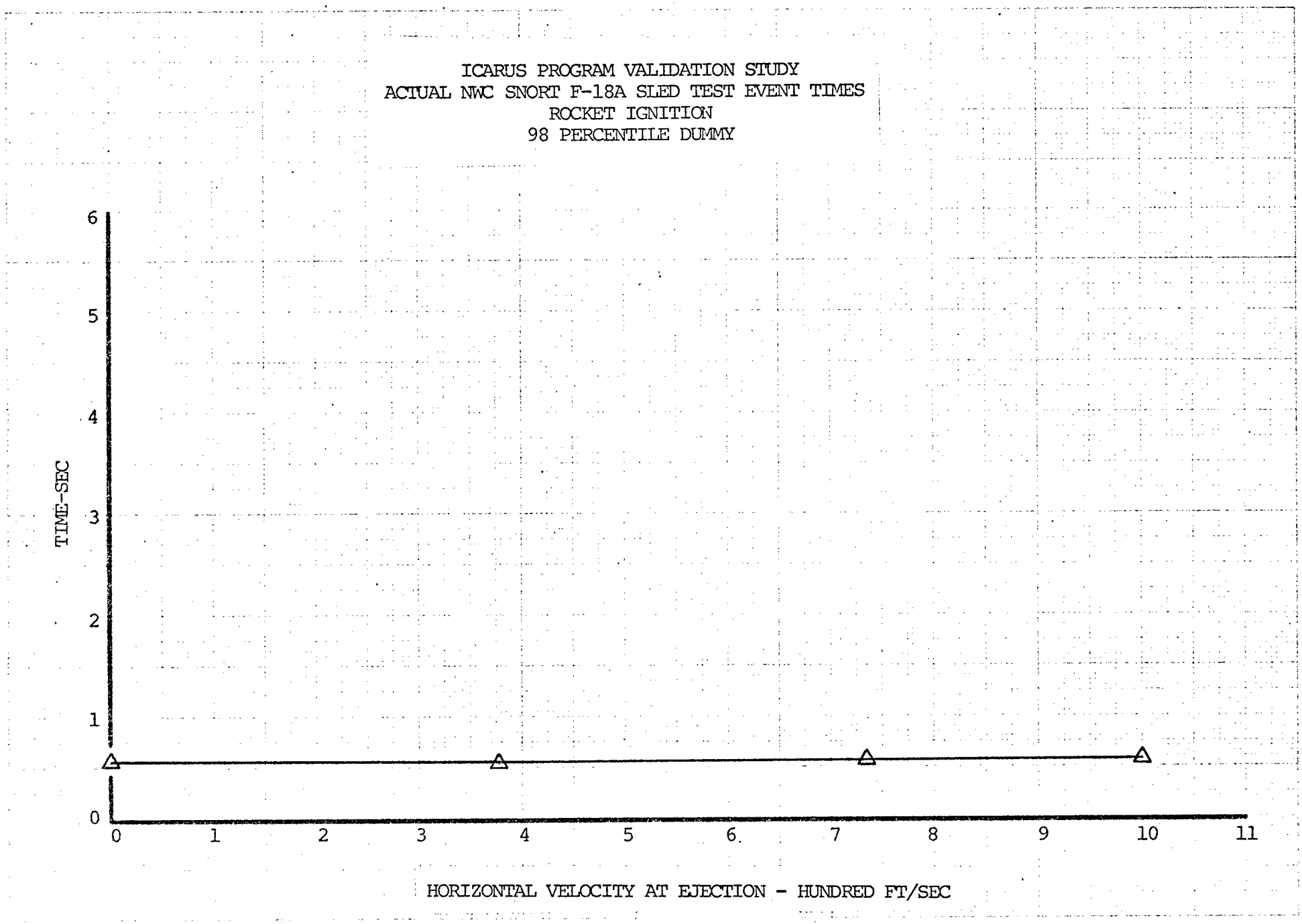

ICARUS PROGRAM VALIDATION STUDY
ACTUAL NWC SNORT F-18A SLED TEST EVENT TIMES
ROCKET IGNITION
98 PERCENTILE DUMMY
TIME-SEC
0
1
2
3
4
5
6
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-8

ICARUS PROGRAM VALIDATION STUDY
ACTUAL NWC SNORT F-18A SLED TEST EVENT TIMES
ROCKET BURNOUT
98 PERCENTILE DUMMY

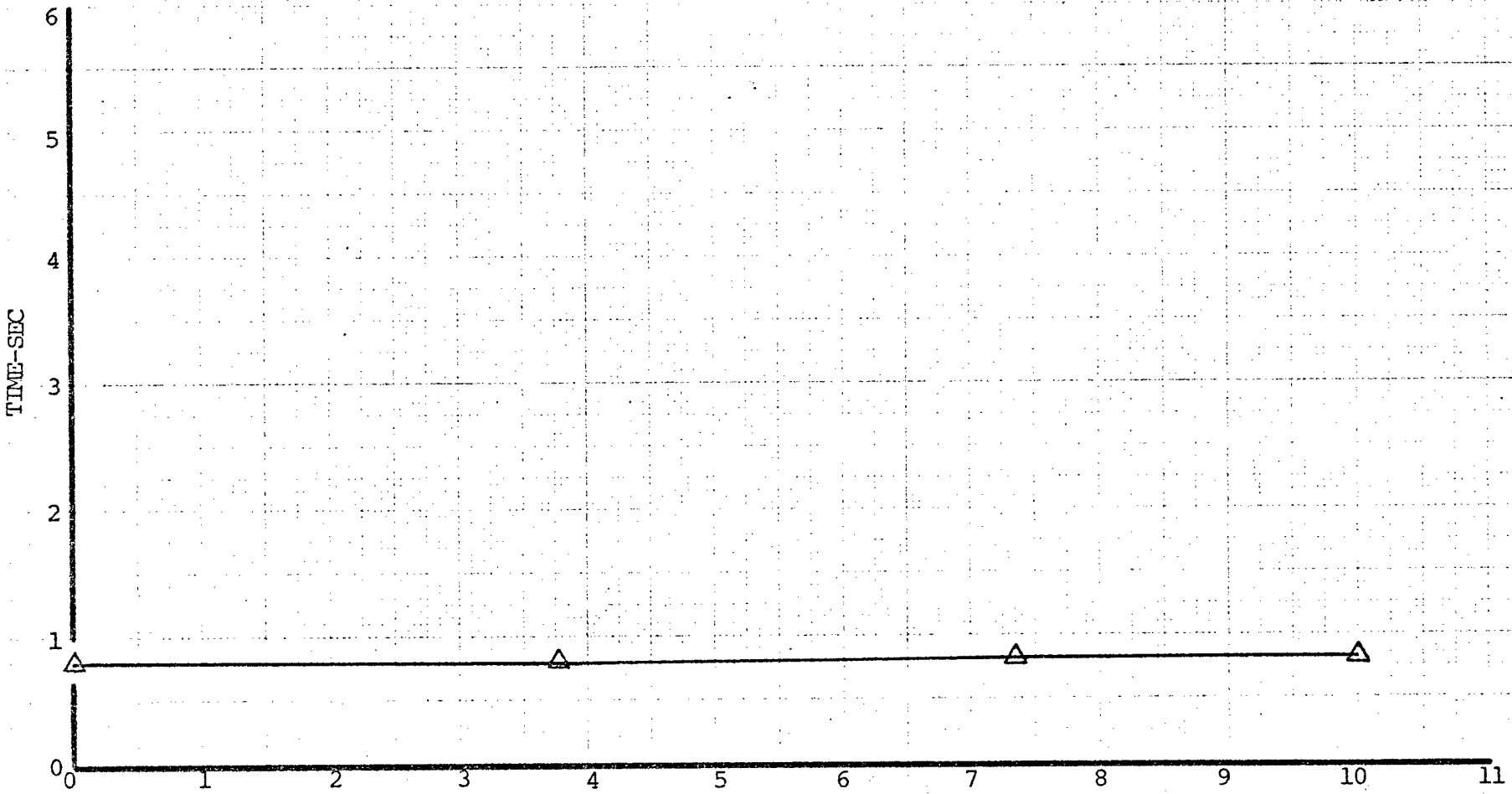


FIGURE F-9

ICARUS PROGRAM VALIDATION STUDY
ACTUAL NWC SNORT F-18A SLED TEST EVENT TIMES
DROGUE GUN FIRE
98 PERCENTILE DUMMY

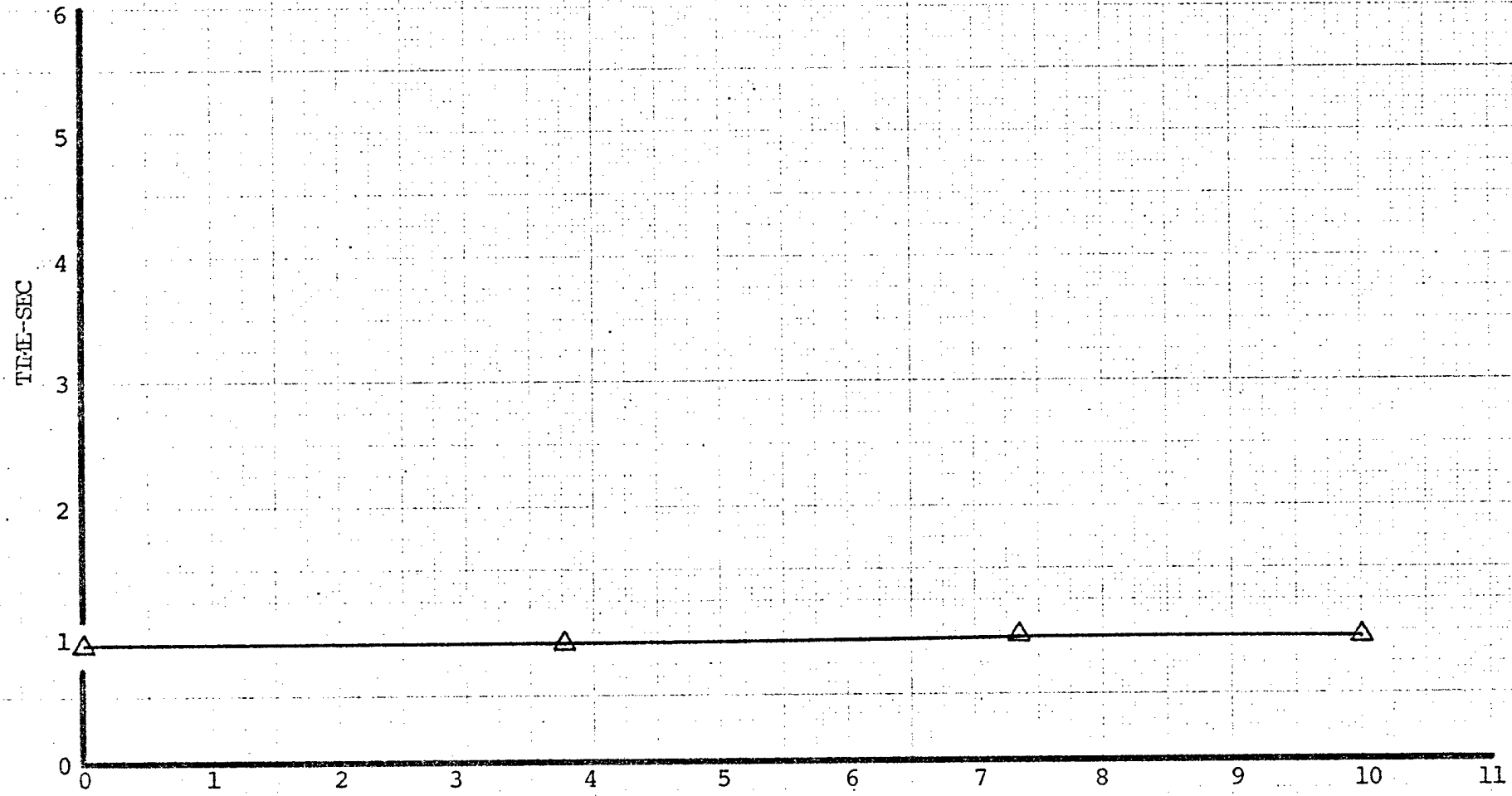


FIGURE F-10

ICARUS PROGRAM VALIDATION STUDY
ACTUAL NWC SNORT F-18A SLED TEST EVENT TIMES
DROGUE PARACHUTE FULL INFLATION
98 PERCENTILE DUMMY

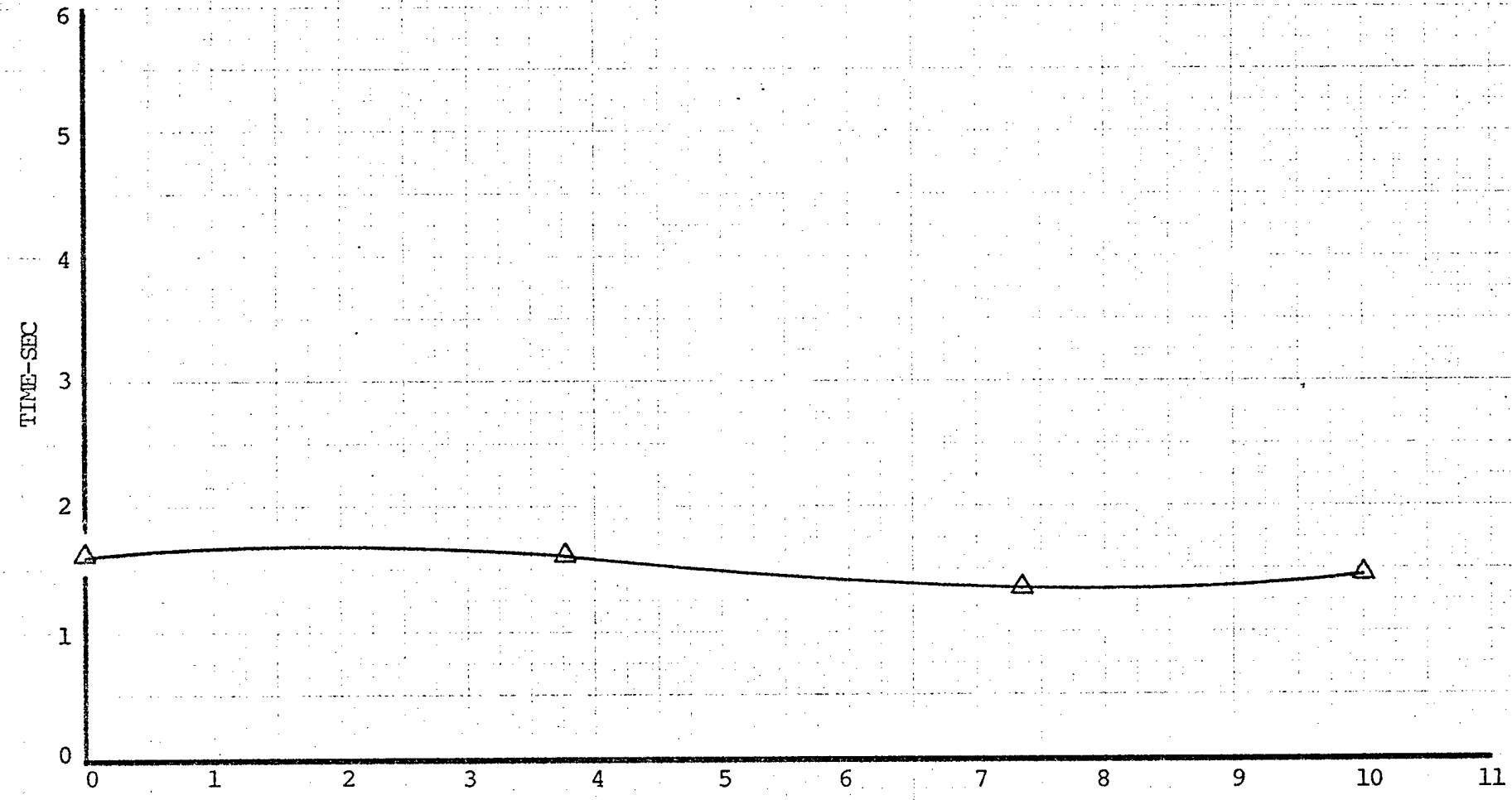


FIGURE F-11

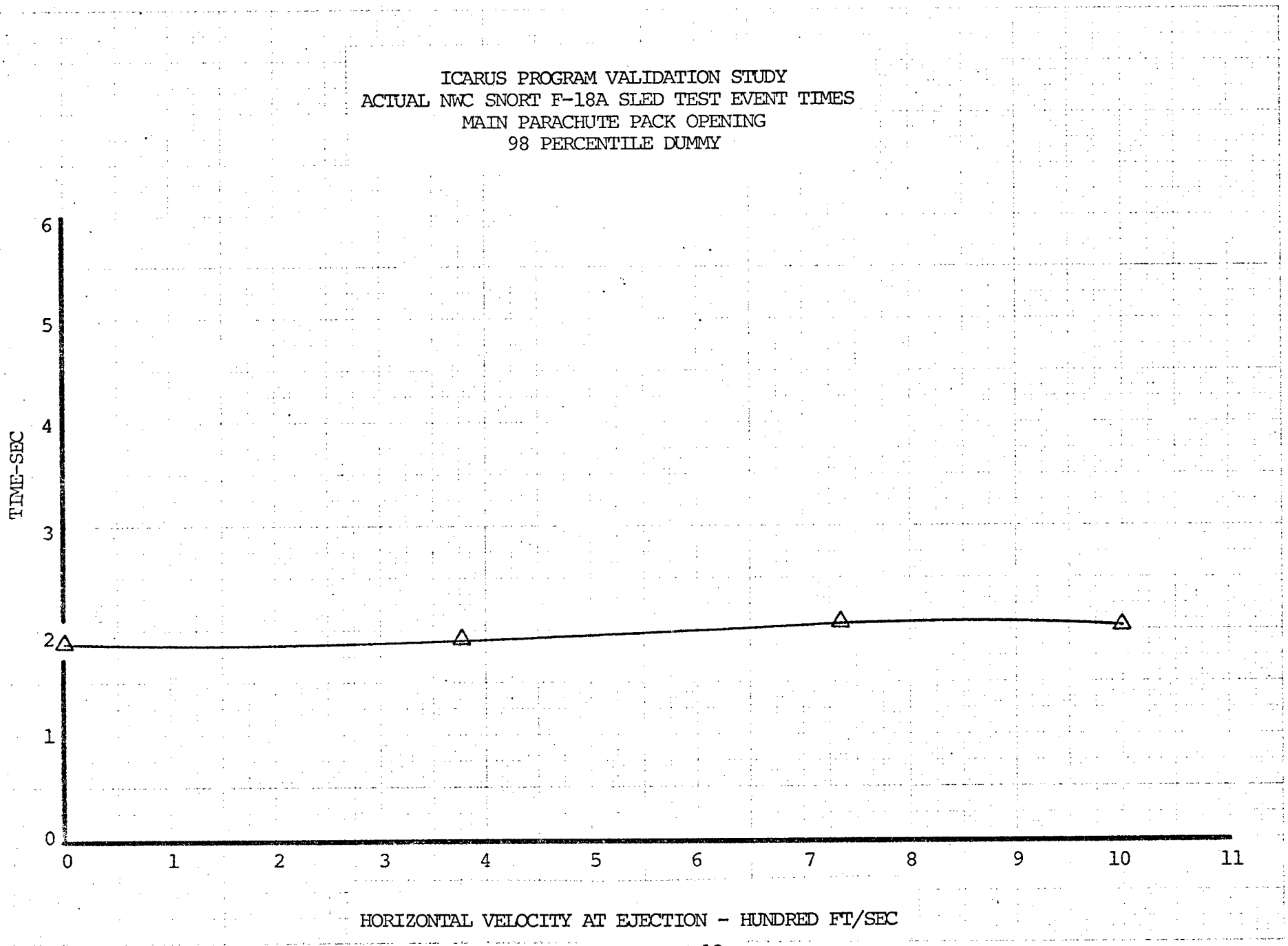

ICARUS PROGRAM VALIDATION STUDY
ACTUAL NWC SNORT F-18A SLED TEST EVENT TIMES
MAIN PARACHUTE PACK OPENING
98 PERCENTILE DUMMY
TIME-SEC
6
5
4
3
2
1
0
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-12

ICARUS PROGRAM VALIDATION STUDY
ACTUAL NWC SNORT F-18A SLED TEST EVENT TIMES
MAIN PARACHUTE RISER LINE STRETCH
98 PERCENTILE DUMMY

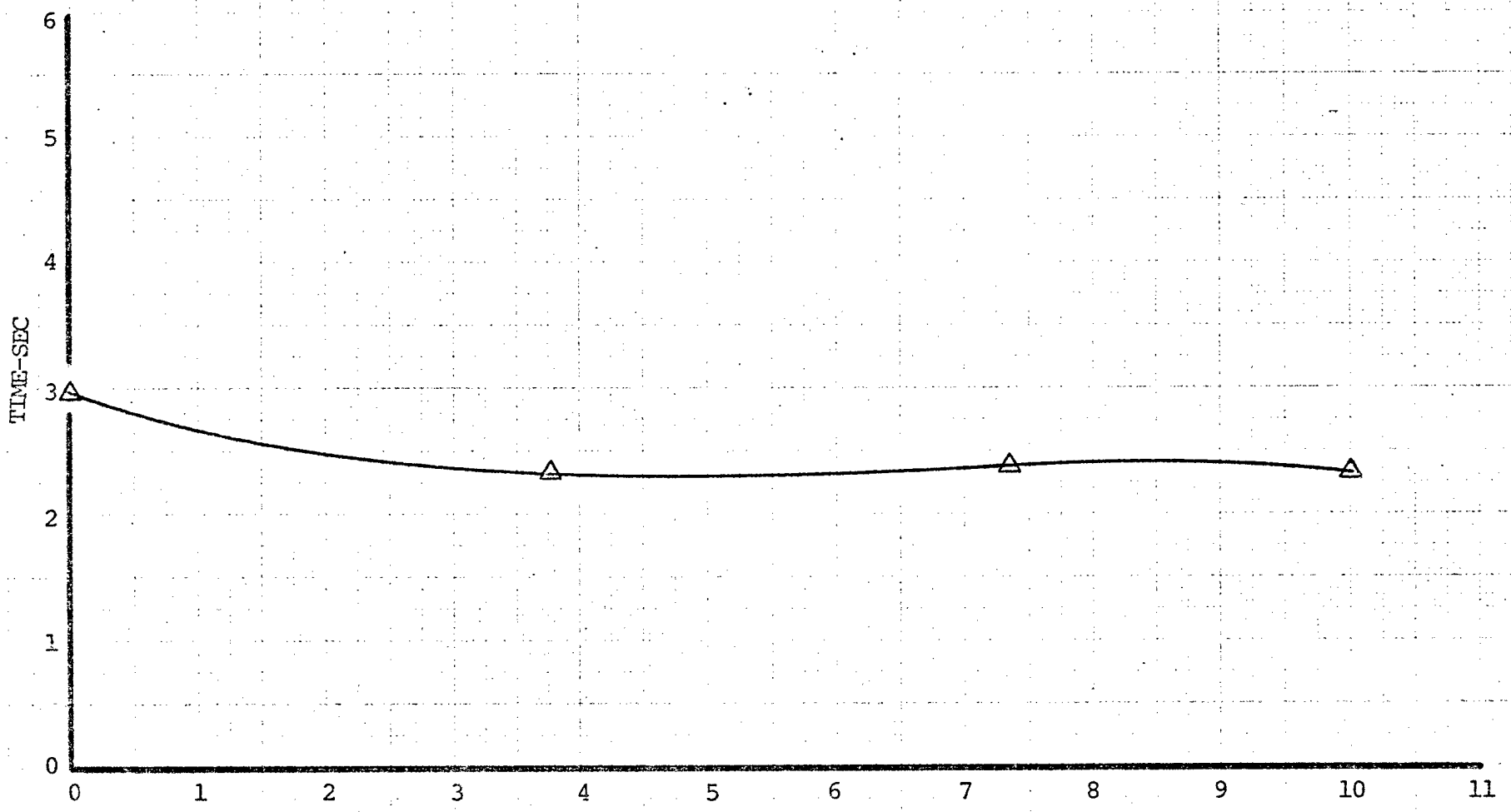


FIGURE F-13

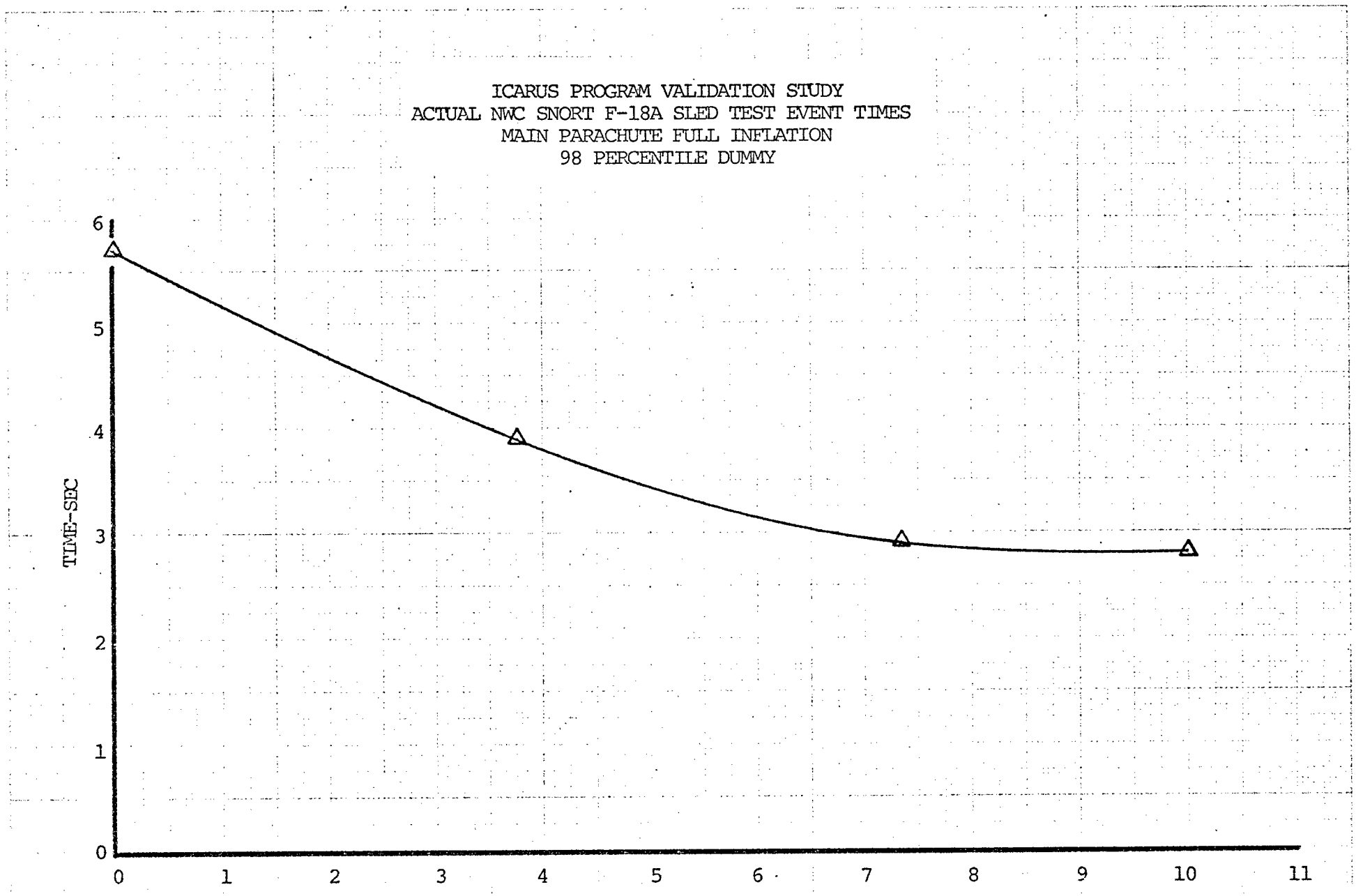

ICARUS PROGRAM VALIDATION STUDY
ACTUAL NWC SNORT F-18A SLED TEST EVENT TIMES
MAIN PARACHUTE FULL INFLATION
98 PERCENTILE DUMMY
TIME-SEC
0
1
2
3
4
5
6
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-14

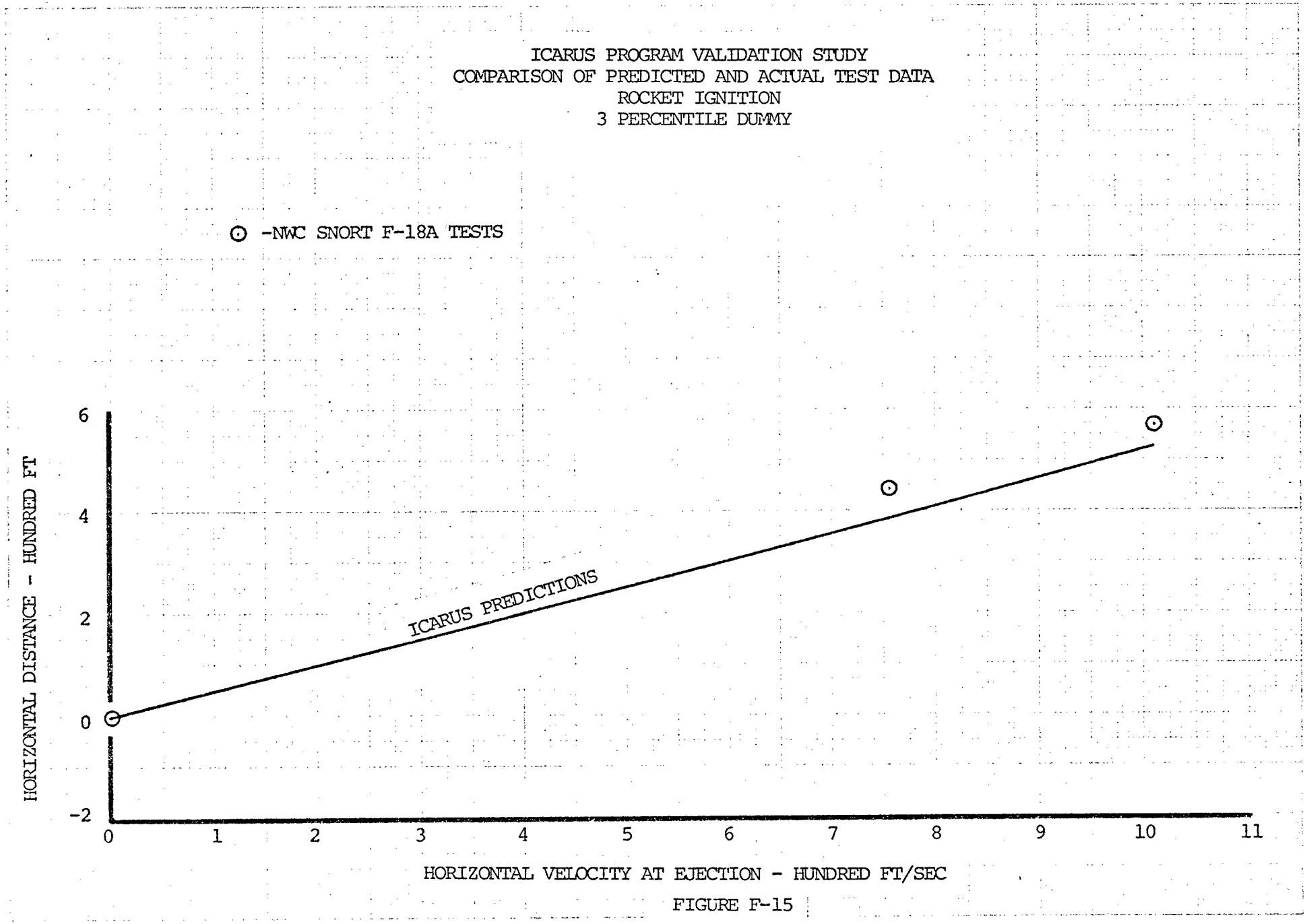

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET IGNITION
3 PERCENTILE DUMMY
⊙ -NWC SNORT F-18A TESTS
ICARUS PREDICTIONS
HORIZONTAL DISTANCE - HUNDRED FT
6
4
2
0
-2
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-15

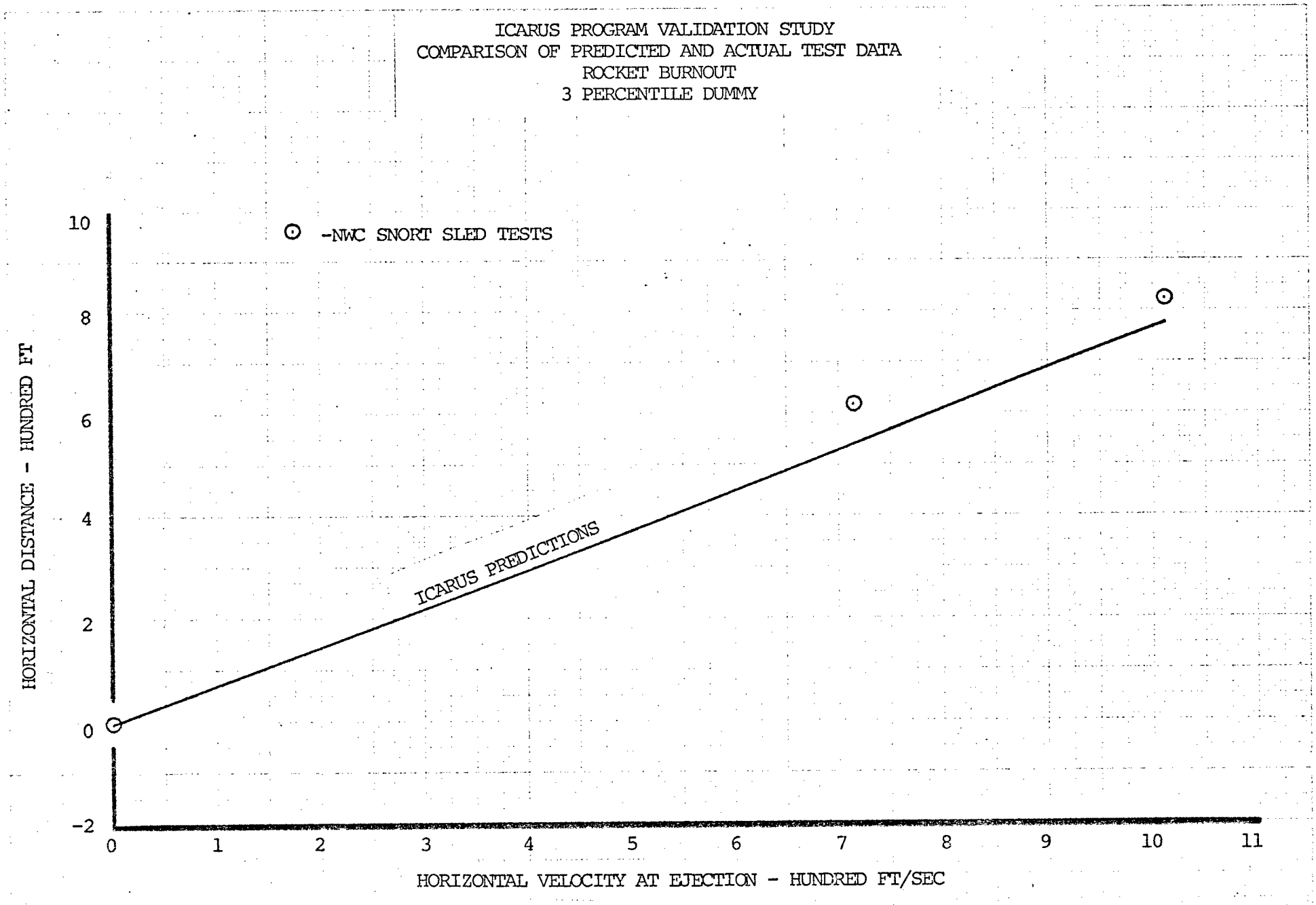

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET BURNOUT
3 PERCENTILE DUMMY
-NWC SNORT SLED TESTS
ICARUS PREDICTIONS
HORIZONTAL DISTANCE - HUNDRED FT
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC
10
8
6
4
2
0
-2
0
1
2
3
4
5
6
7
8
9
10
11

FIGURE F-16

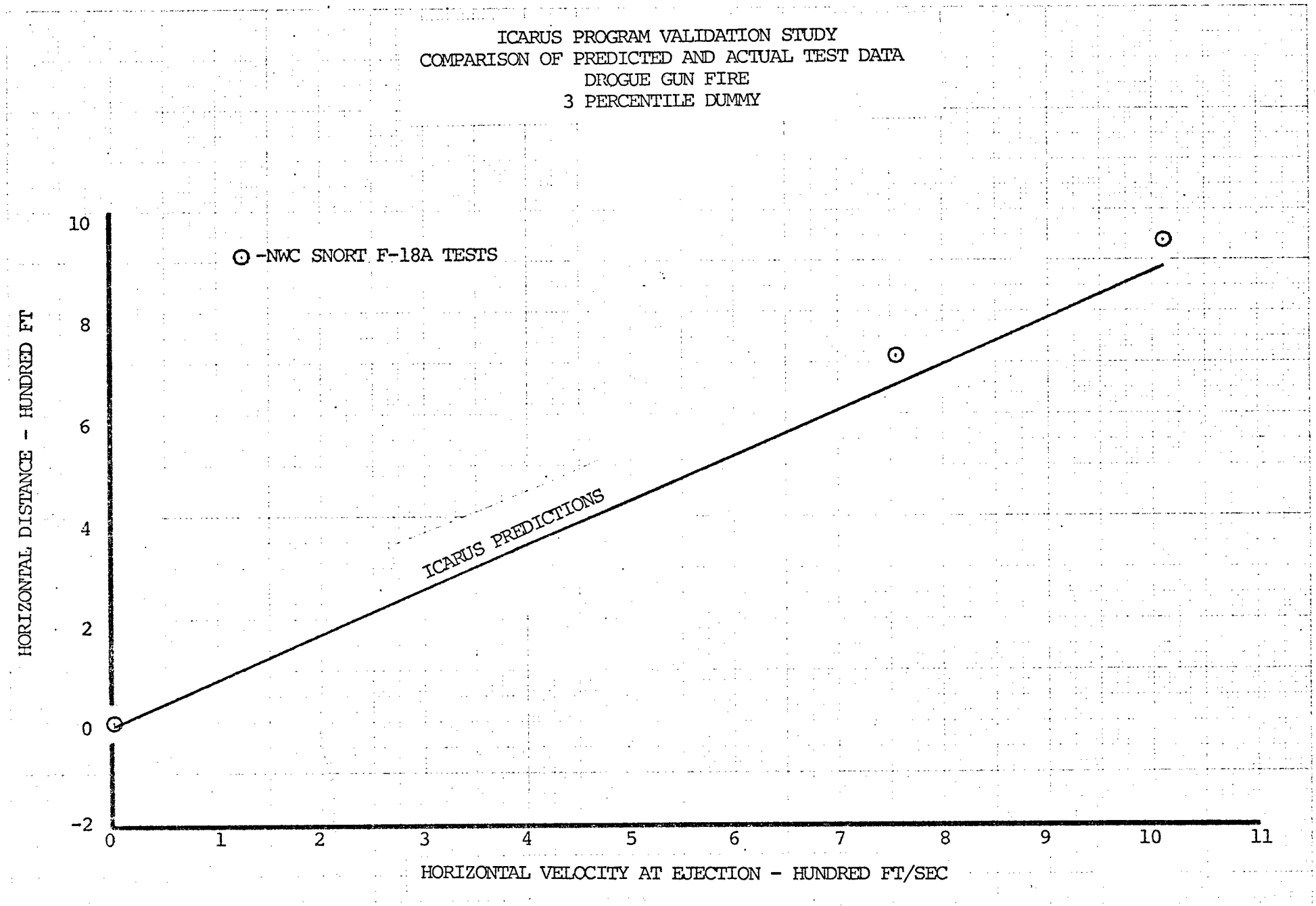

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE GUN FIRE
3 PERCENTILE DUMMY
⊙ -NWC SNORT F-18A TESTS
ICARUS PREDICTIONS
HORIZONTAL DISTANCE - HUNDRED FT
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC
10
8
6
4
2
0
-2
0
1
2
3
4
5
6
7
8
9
10
11

FIGURE F-17

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE PARACHUTE FULL INFLATION
3 PERCENTILE DUMMY

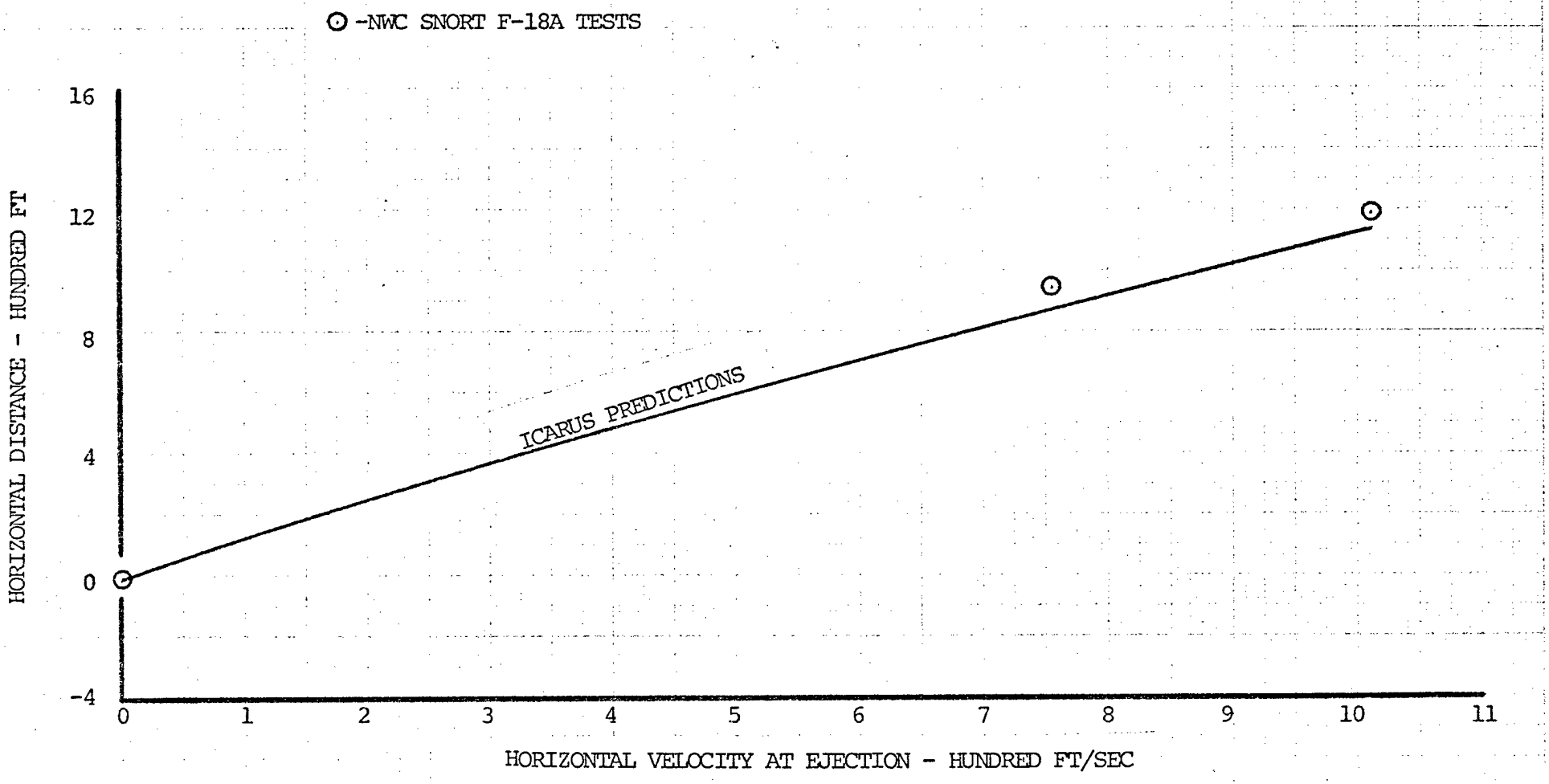


FIGURE F-18

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE PACK OPENING
3 PERCENTILE DUMMY

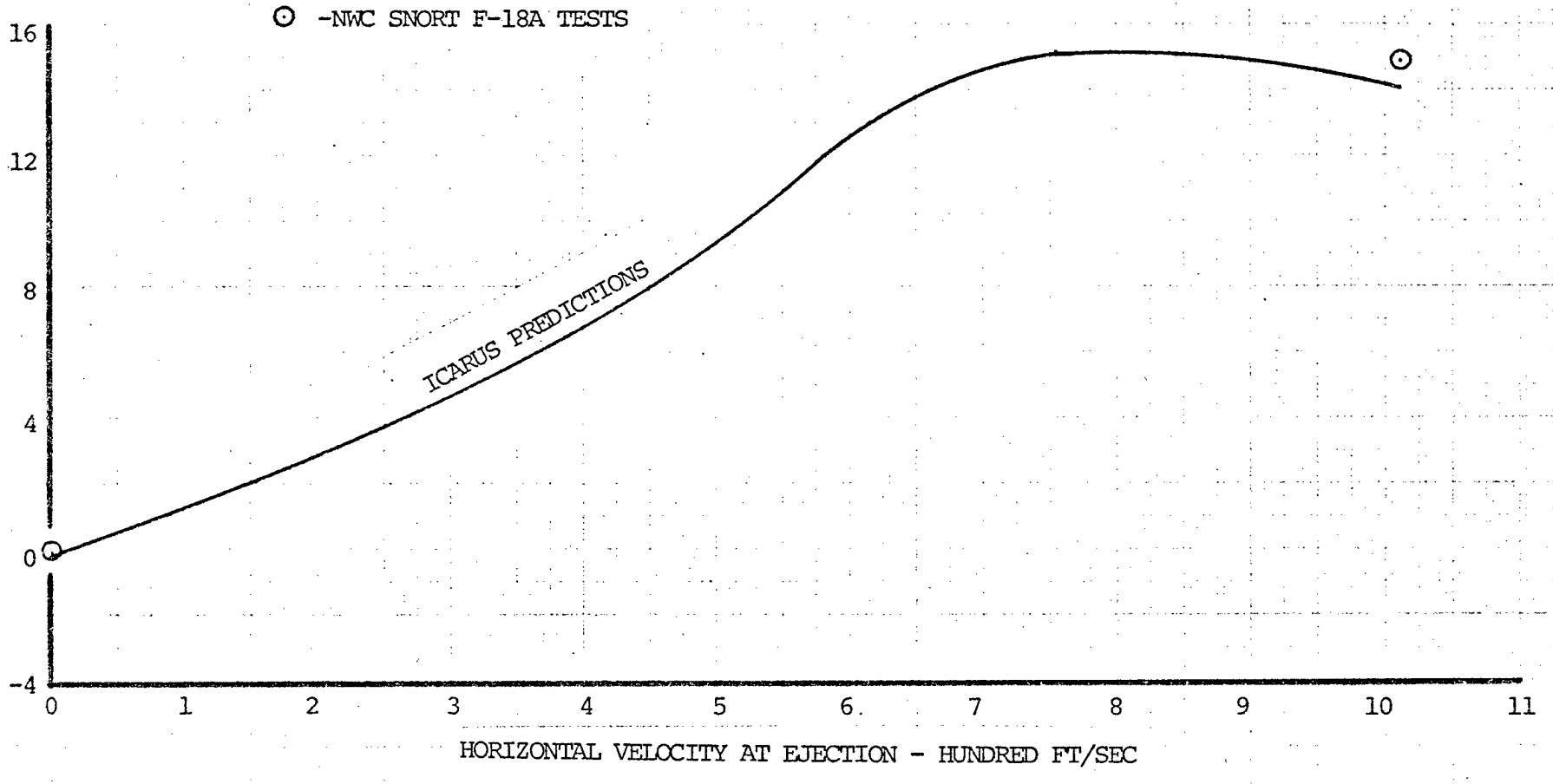


FIGURE F-19

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE RISER LINE STRETCH
3 PERCENTILE DUMMY

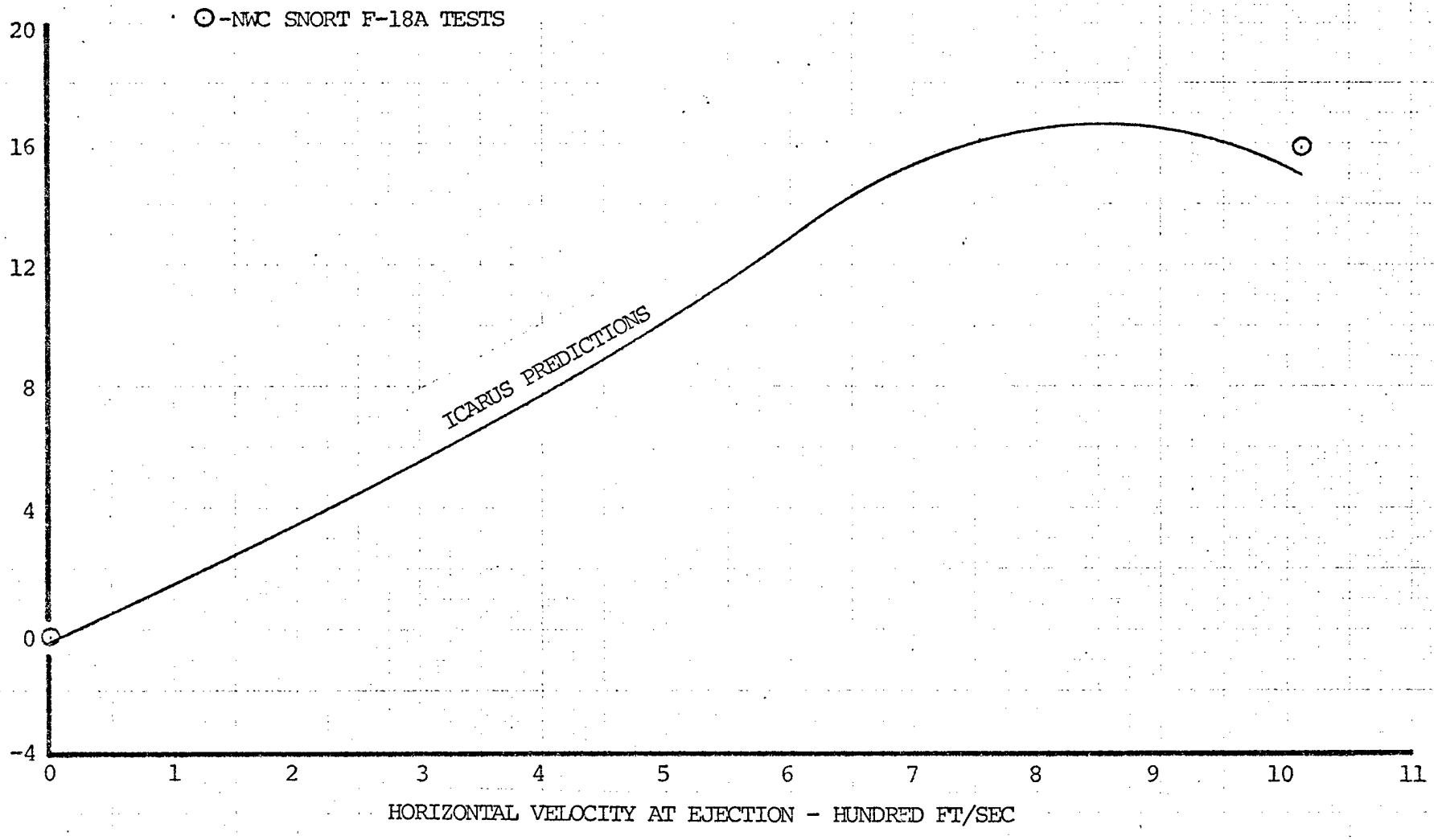


FIGURE F-20

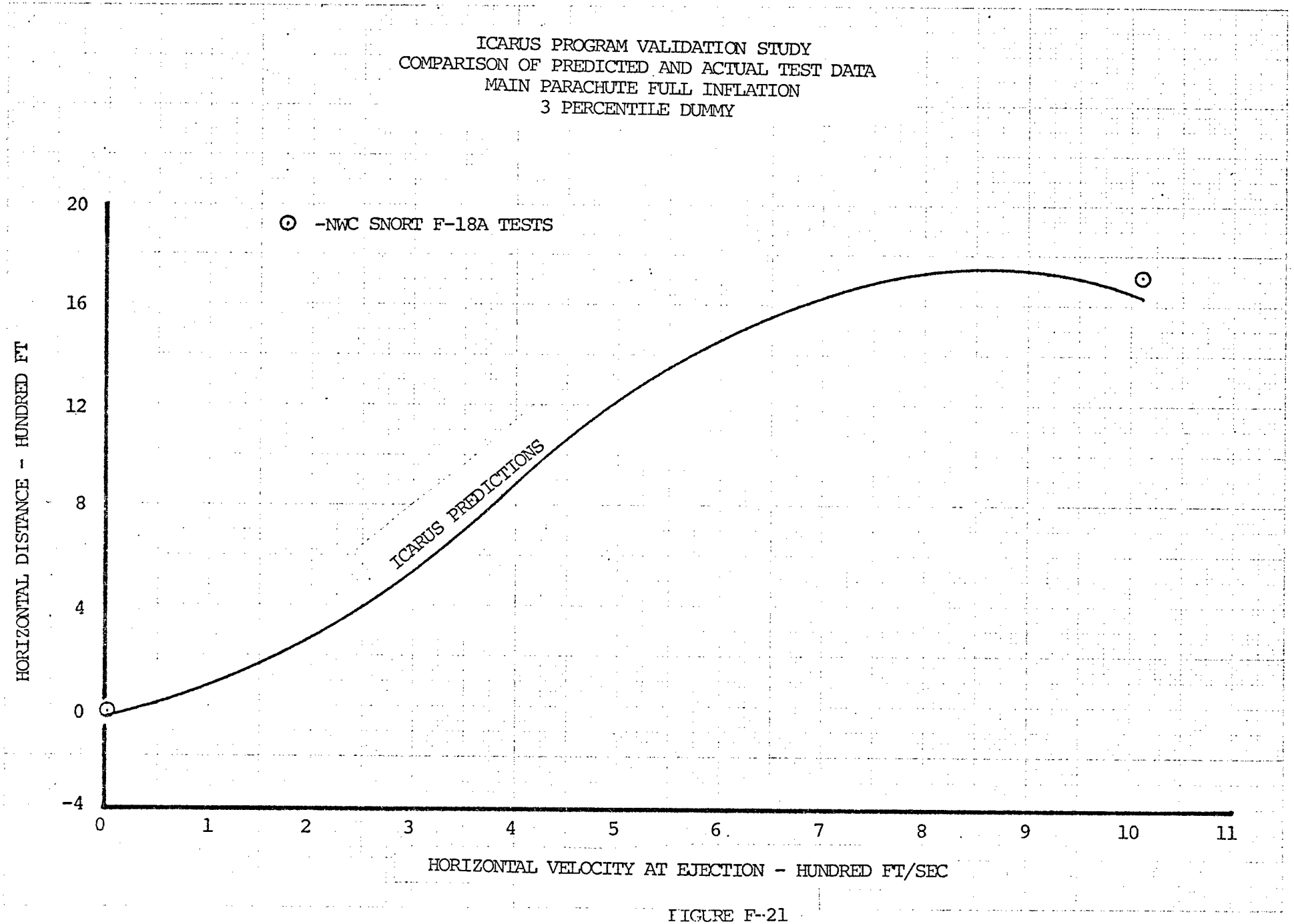

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE FULL INFLATION
3 PERCENTILE DUMMY
⊙ -NWC SNORT F-18A TESTS
ICARUS PREDICTIONS
HORIZONTAL DISTANCE - HUNDRED FT
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC
20
16
12
8
4
0
-4
0
1
2
3
4
5
6
7
8
9
10
11

FIGURE F-21

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET IGNITION
98 PERCENTILE DUMMY

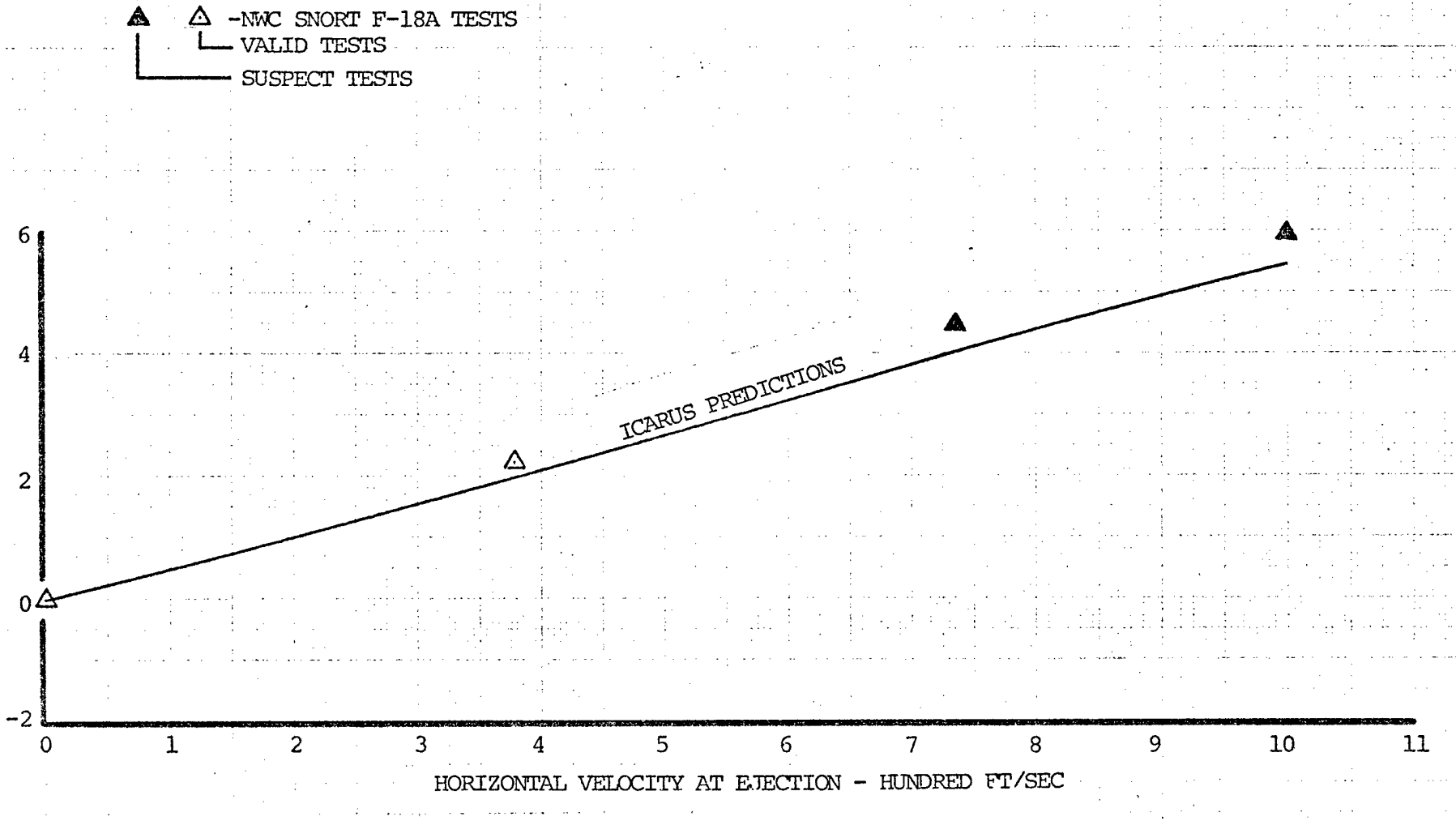


FIGURE F-22

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET BURNOUT
98 PERCENTILE DUMMY

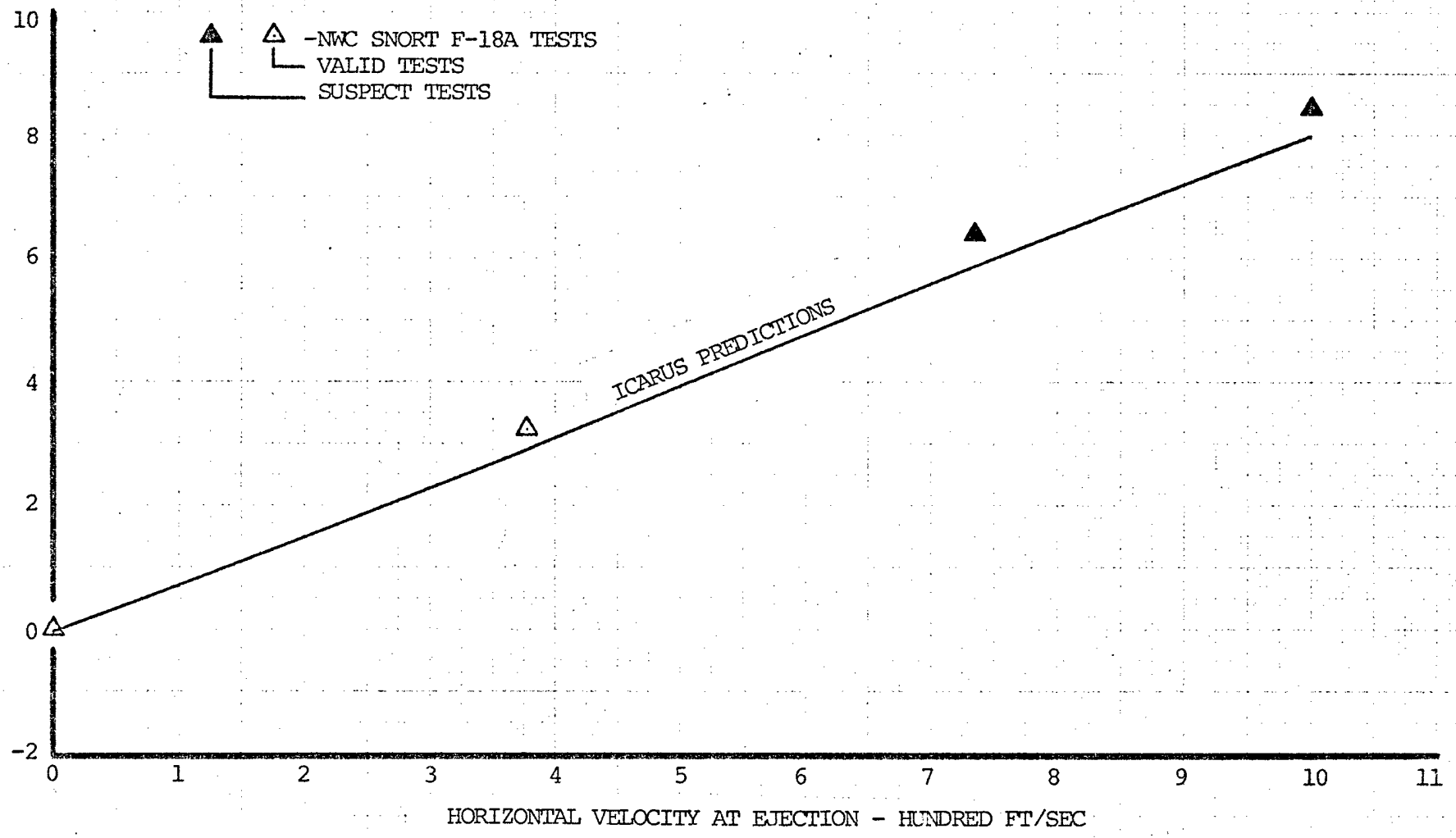


FIGURE F-23

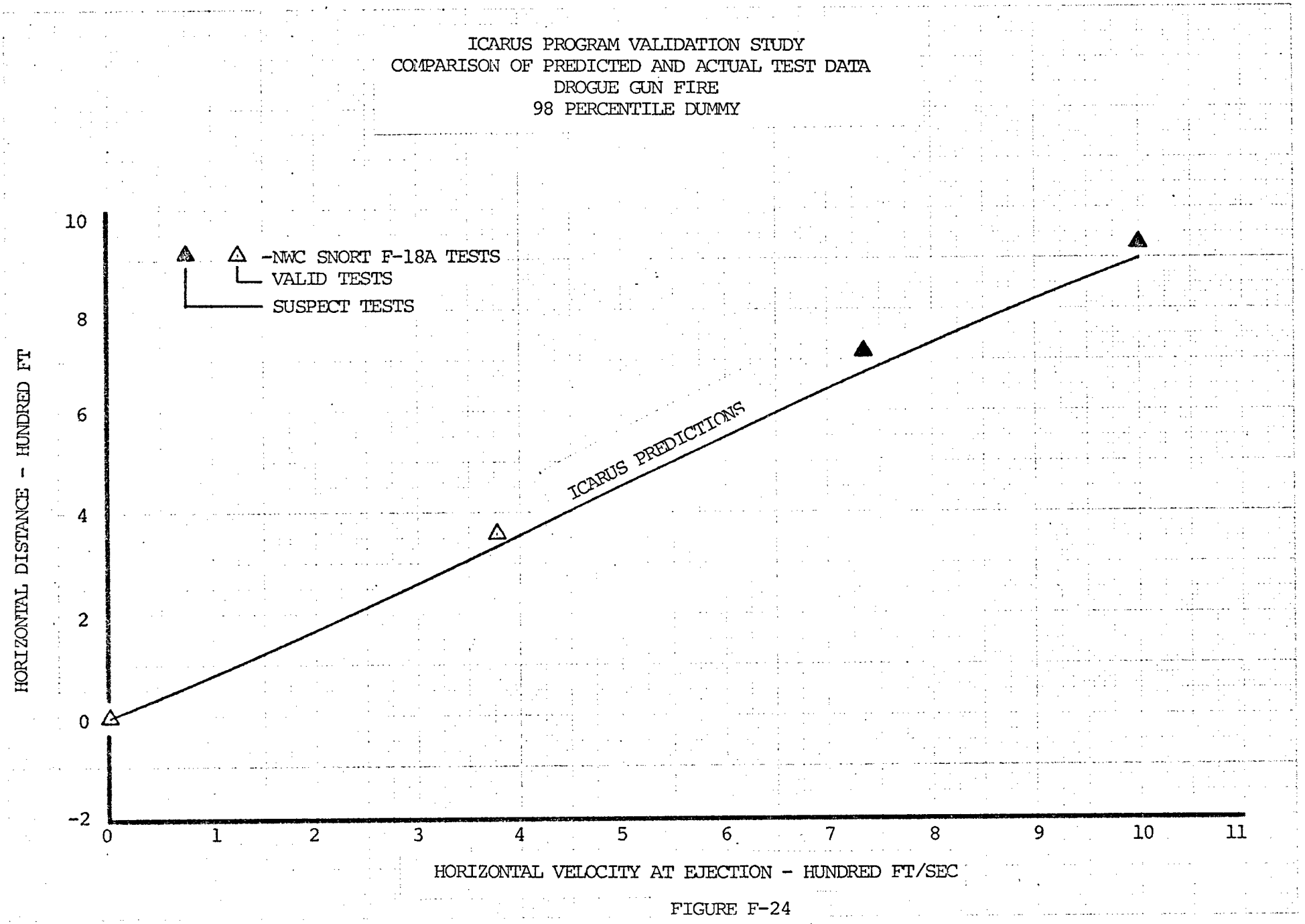

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE GUN FIRE
98 PERCENTILE DUMMY
-NWC SNORT F-18A TESTS
VALID TESTS
SUSPECT TESTS
ICARUS PREDICTIONS
HORIZONTAL DISTANCE - HUNDRED FT
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC
10
8
6
4
2
0
-2
0
1
2
3
4
5
6
7
8
9
10
11

FIGURE F-24

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE PARACHUTE FULL INFLATION
98 PERCENTILE DUMMY

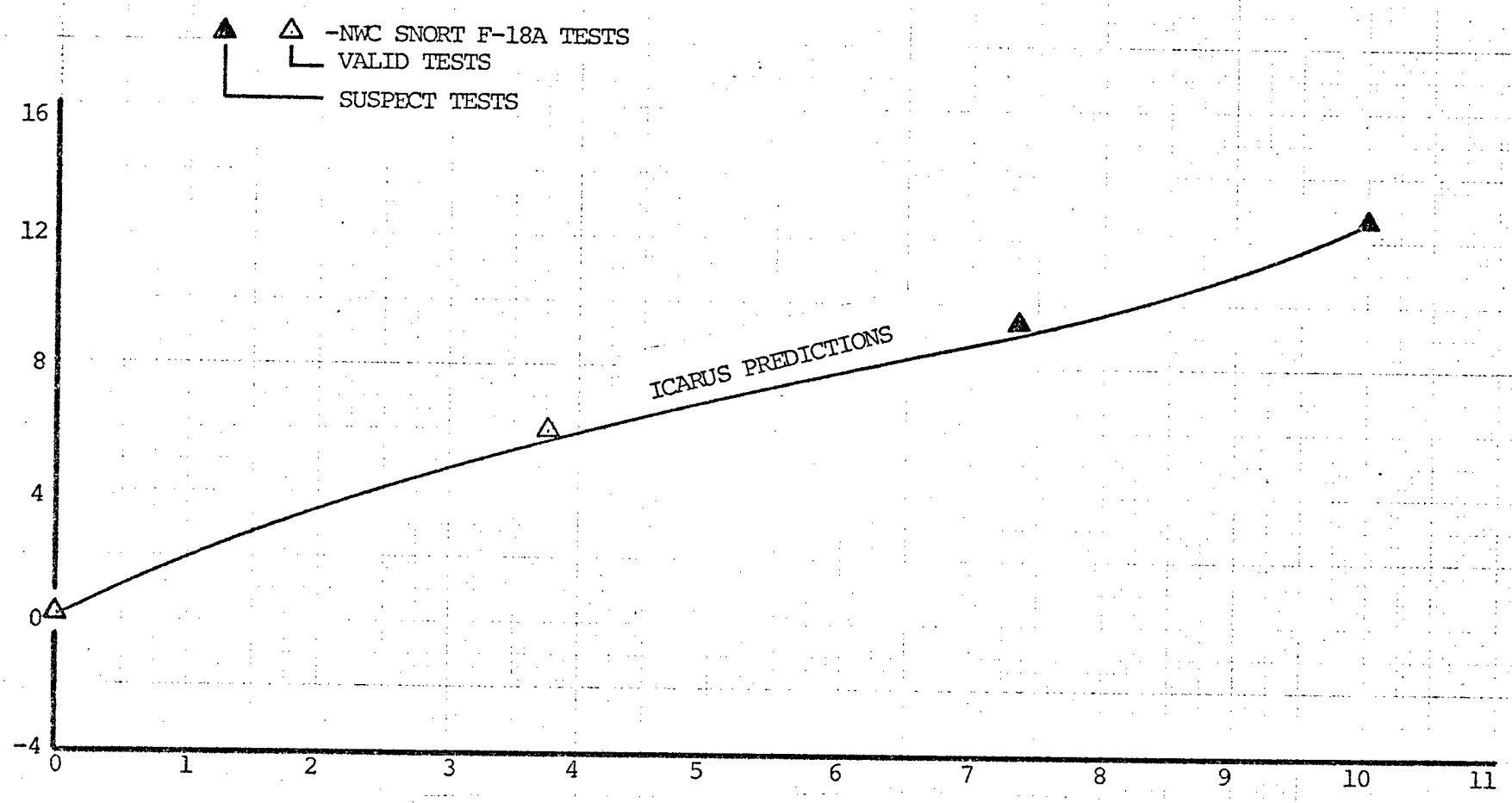


FIGURE F-25

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE PACK OPENING
98 PERCENTILE DUMMY

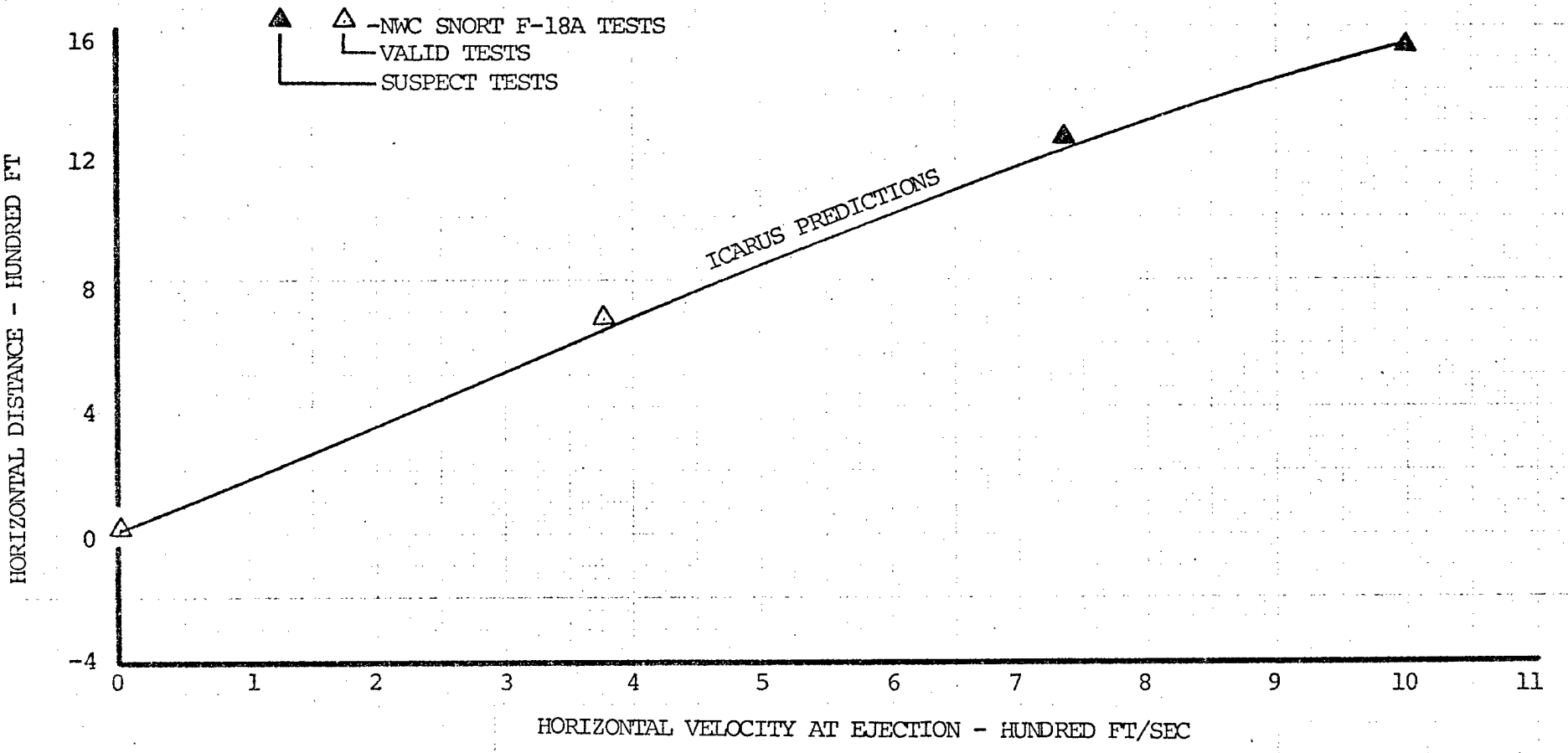


FIGURE F-26

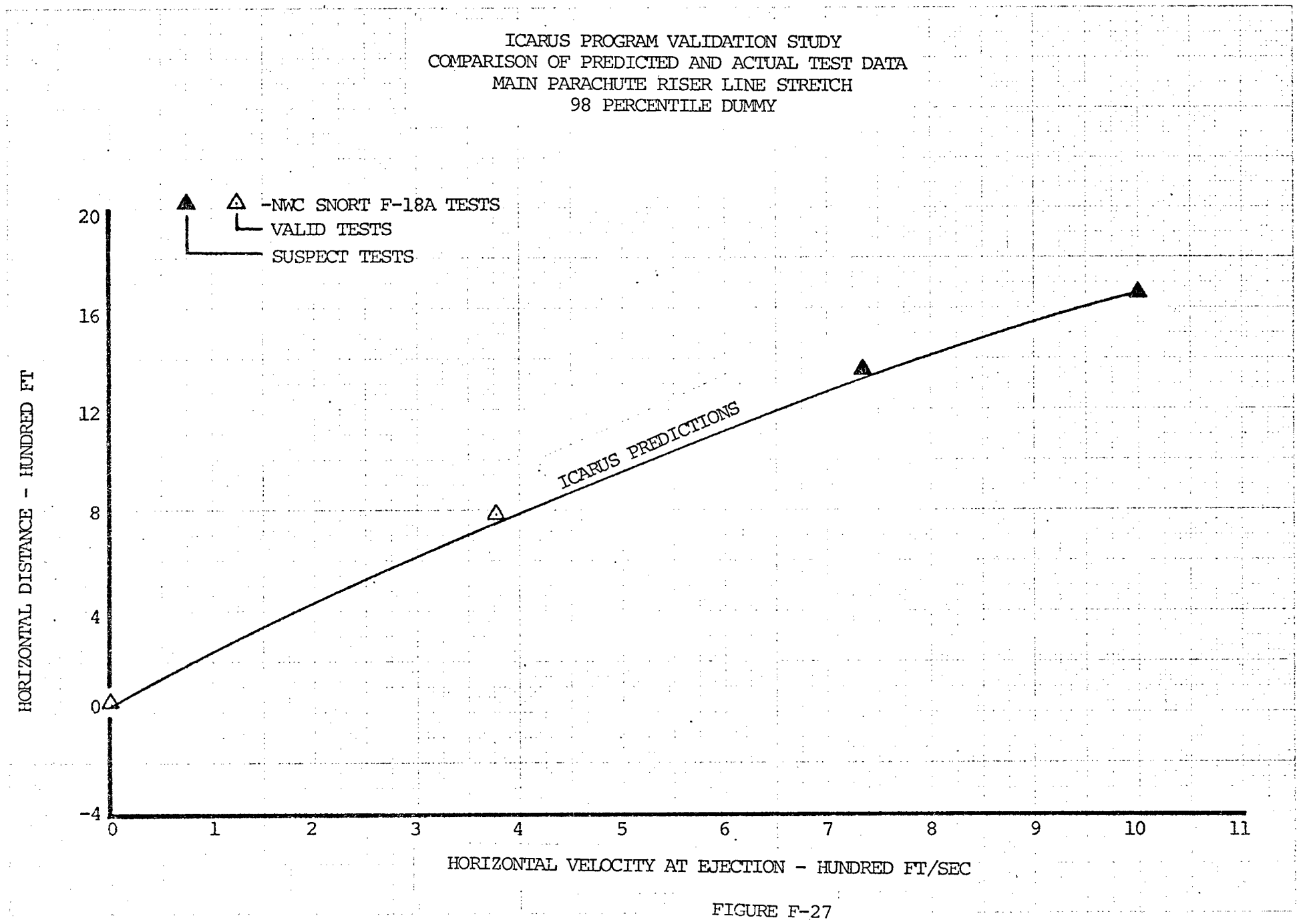

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE RISER LINE STRETCH
98 PERCENTILE DUMMY
-NWC SNORT F-18A TESTS
VALID TESTS
SUSPECT TESTS
ICARUS PREDICTIONS
HORIZONTAL DISTANCE - HUNDRED FT
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC
20
16
12
8
4
0
-4
0
1
2
3
4
5
6
7
8
9
10
11

FIGURE F-27

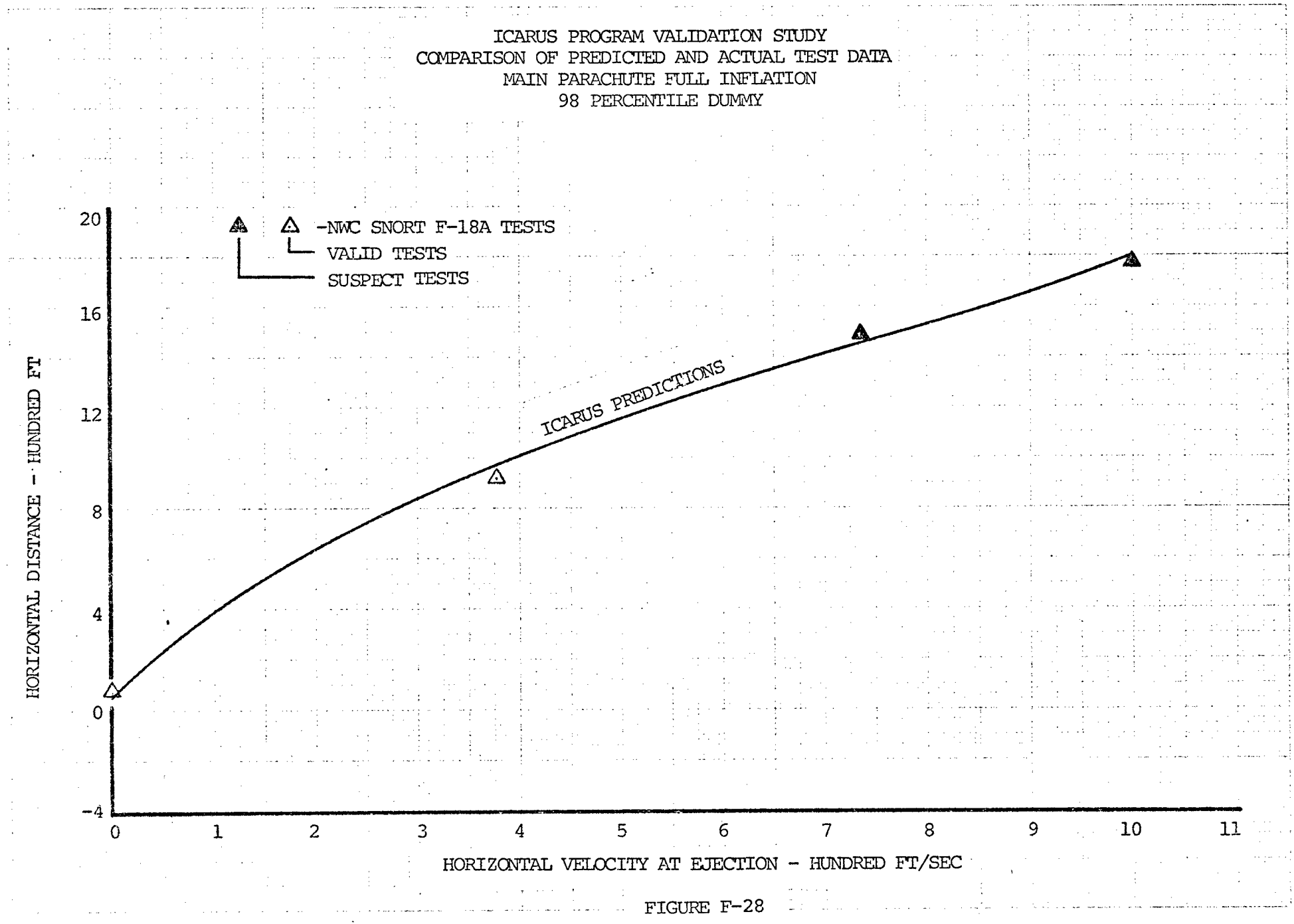

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE FULL INFLATION
98 PERCENTILE DUMMY
-NWC SNORT F-18A TESTS
VALID TESTS
SUSPECT TESTS
ICARUS PREDICTIONS
HORIZONTAL DISTANCE - HUNDRED FT
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC
20
16
12
8
4
0
-4
0
1
2
3
4
5
6
7
8
9
10
11

FIGURE F-28

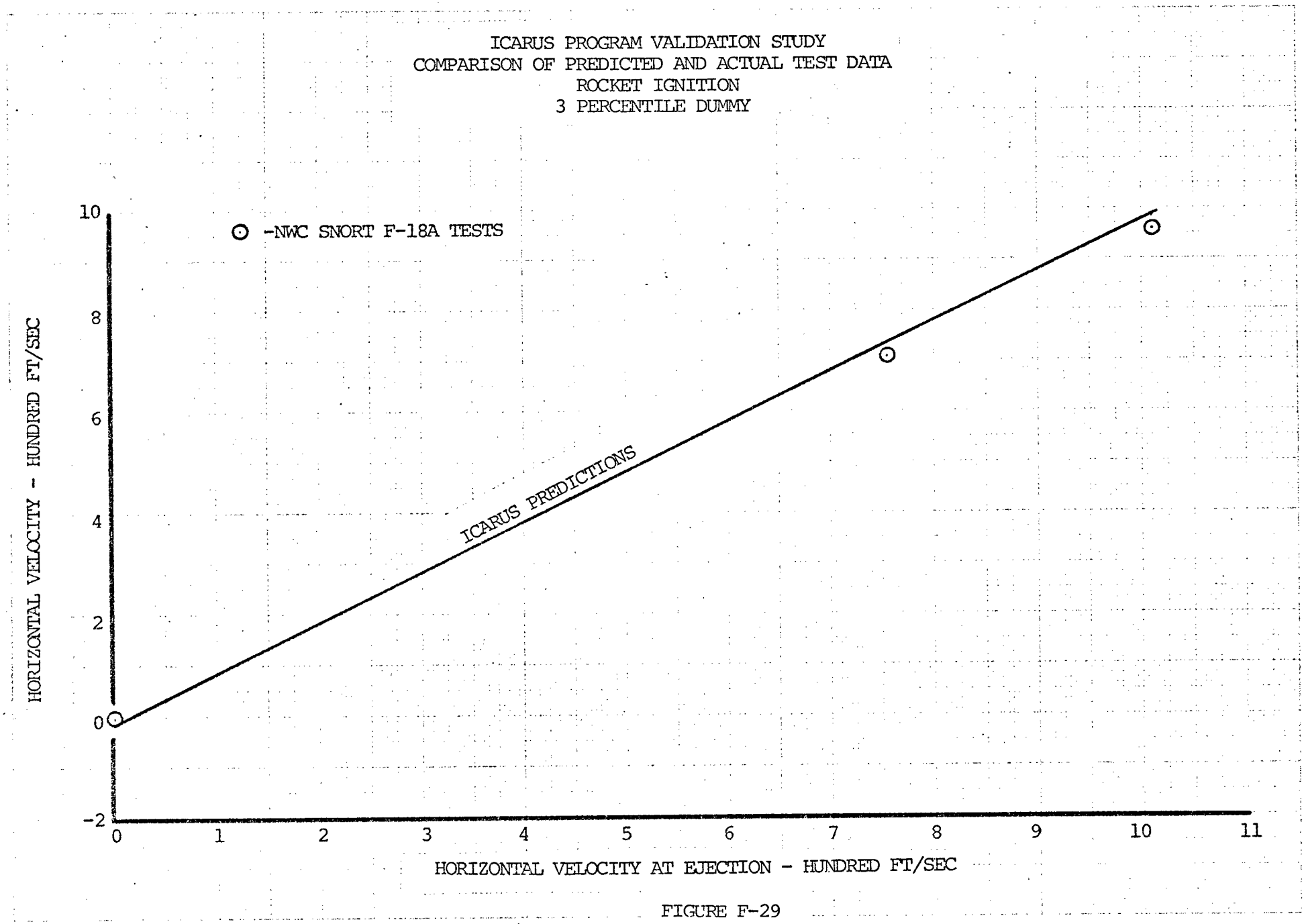

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET IGNITION
3 PERCENTILE DUMMY
-NWC SNORT F-18A TESTS
ICARUS PREDICTIONS
HORIZONTAL VELOCITY - HUNDRED FT/SEC
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC
10
8
6
4
2
0
-2
0
1
2
3
4
5
6
7
8
9
10
11

FIGURE F-29

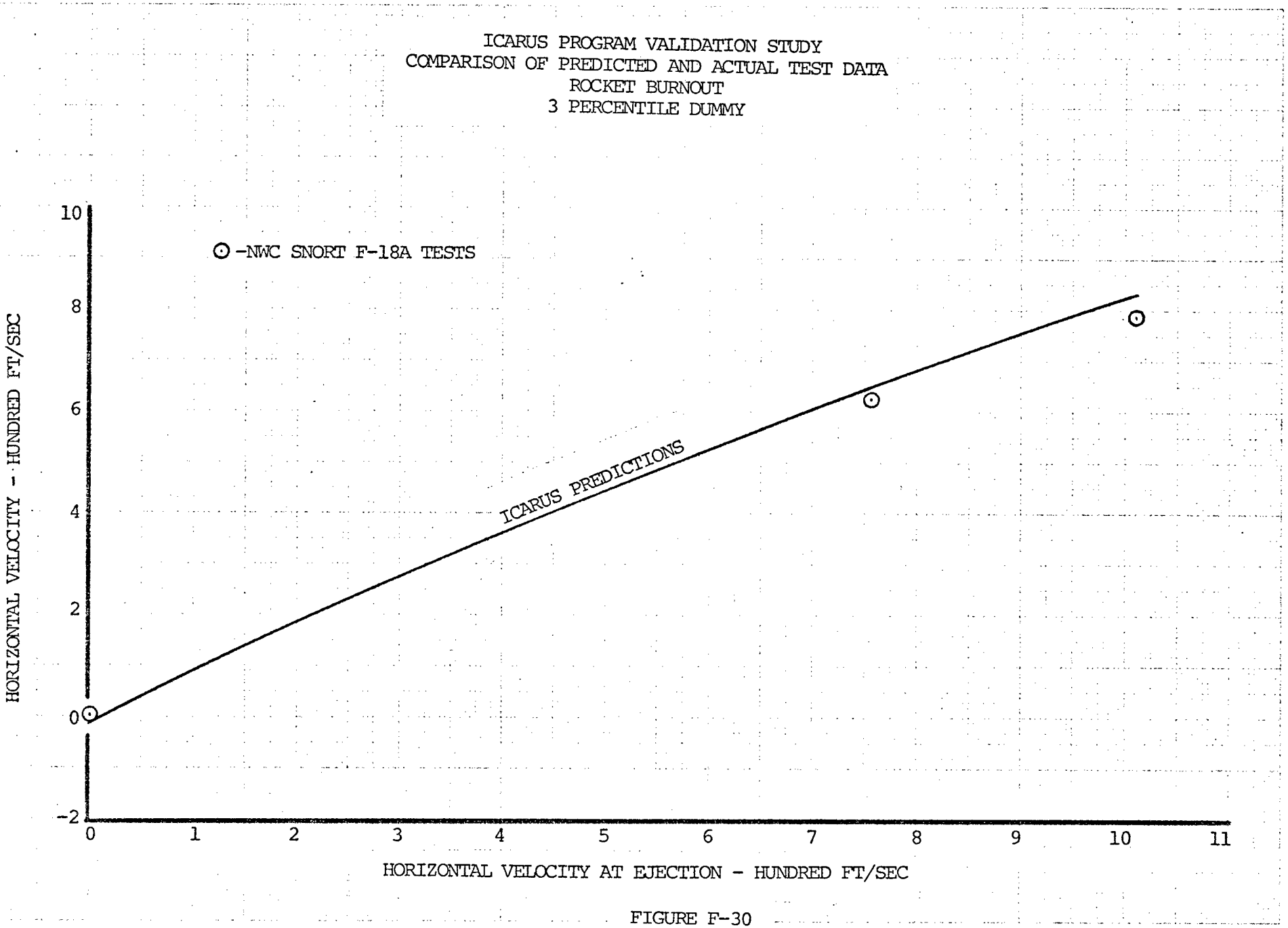

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET BURNOUT
3 PERCENTILE DUMMY
⊙ -NWC SNORT F-18A TESTS
ICARUS PREDICTIONS
HORIZONTAL VELOCITY - HUNDRED FT/SEC
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC
10
8
6
4
2
0
-2
0
1
2
3
4
5
6
7
8
9
10
11

FIGURE F-30

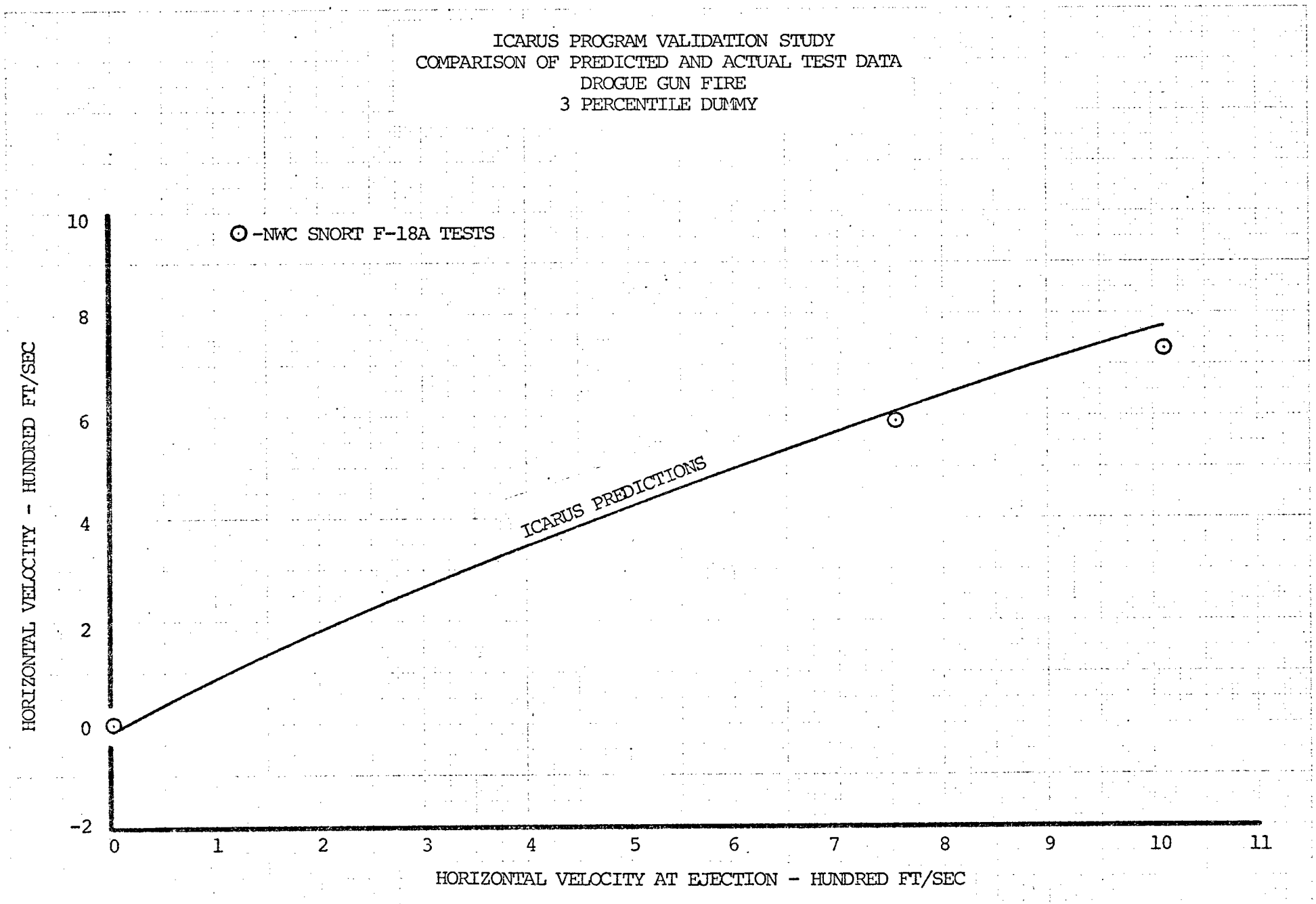

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE GUN FIRE
3 PERCENTILE DUMMY
⊙-NWC SNORT F-18A TESTS
ICARUS PREDICTIONS
HORIZONTAL VELOCITY - HUNDRED FT/SEC
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC
10
8
6
4
2
0
-2
0
1
2
3
4
5
6
7
8
9
10
11

FIGURE F-31

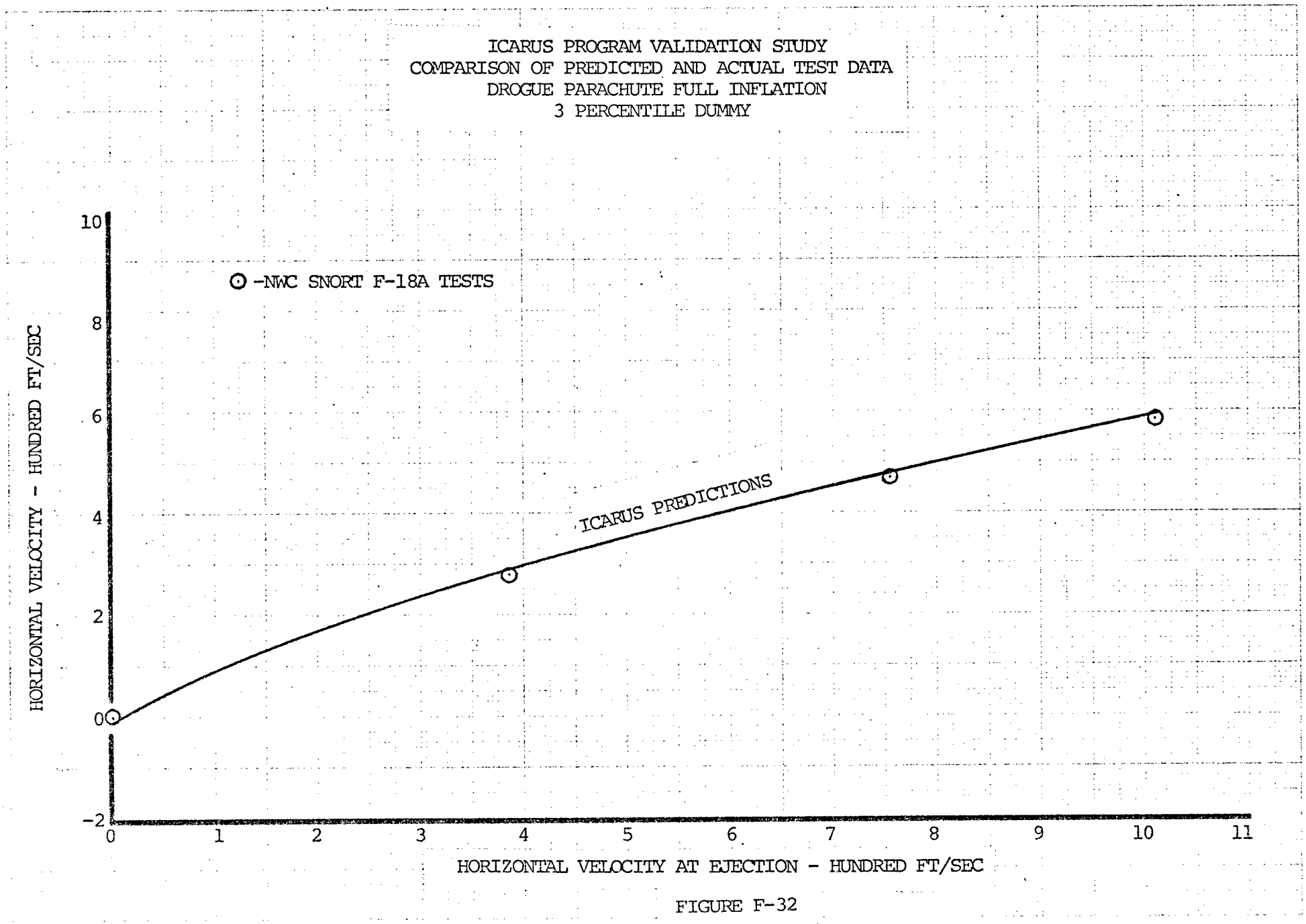

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE PARACHUTE FULL INFLATION
3 PERCENTILE DUMMY
⊙ -NWC SNORT F-18A TESTS
ICARUS PREDICTIONS
HORIZONTAL VELOCITY - HUNDRED FT/SEC
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC
10
8
6
4
2
0
-2
0
1
2
3
4
5
6
7
8
9
10
11

FIGURE F-32

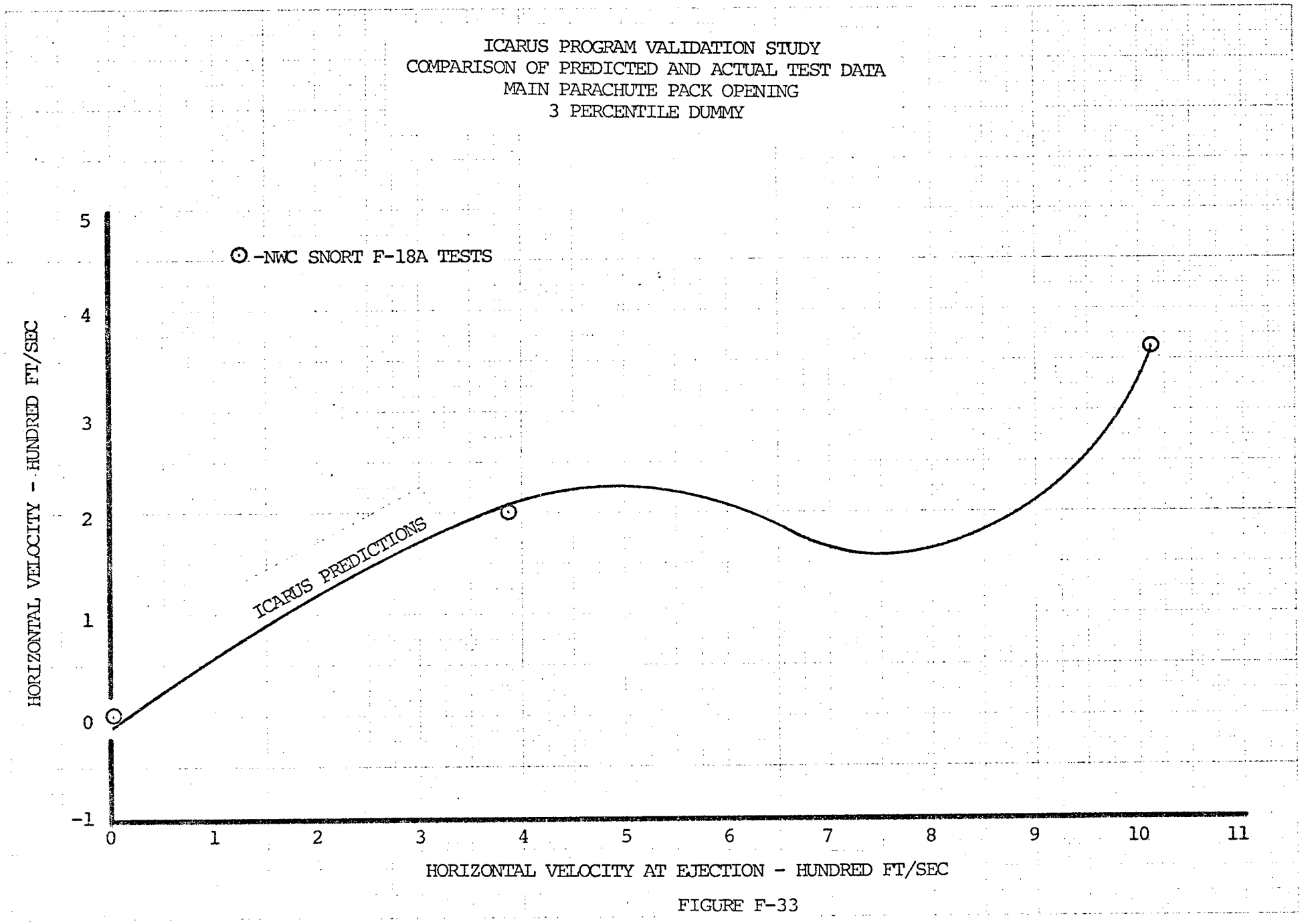

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE PACK OPENING
3 PERCENTILE DUMMY
⊙-NWC SNORT F-18A TESTS
ICARUS PREDICTIONS
HORIZONTAL VELOCITY - HUNDRED FT/SEC
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC
5
4
3
2
1
0
-1
0
1
2
3
4
5
6
7
8
9
10
11

FIGURE F-33

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE RISER LINE STRETCH
3 PERCENTILE DUMMY

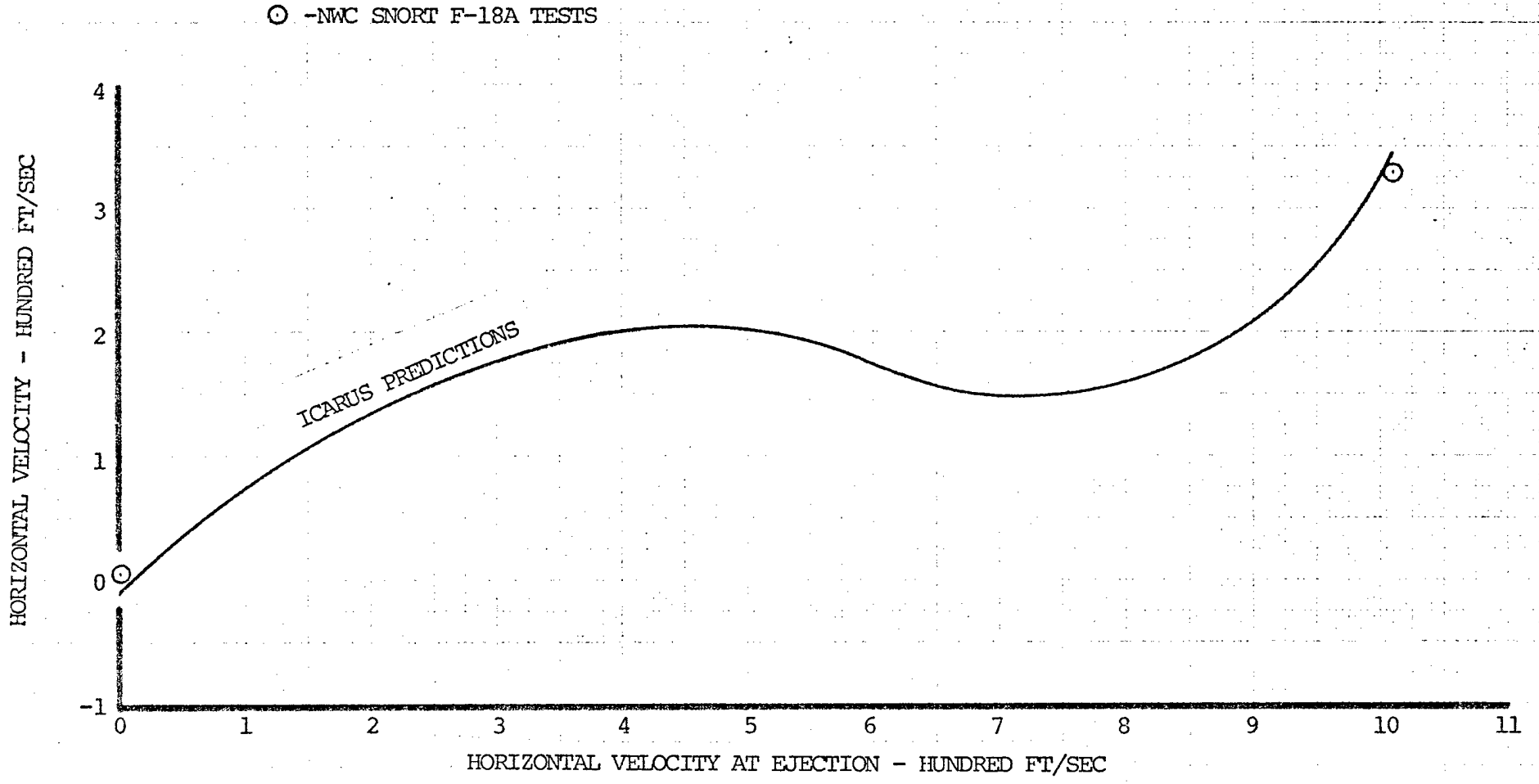


FIGURE F-34

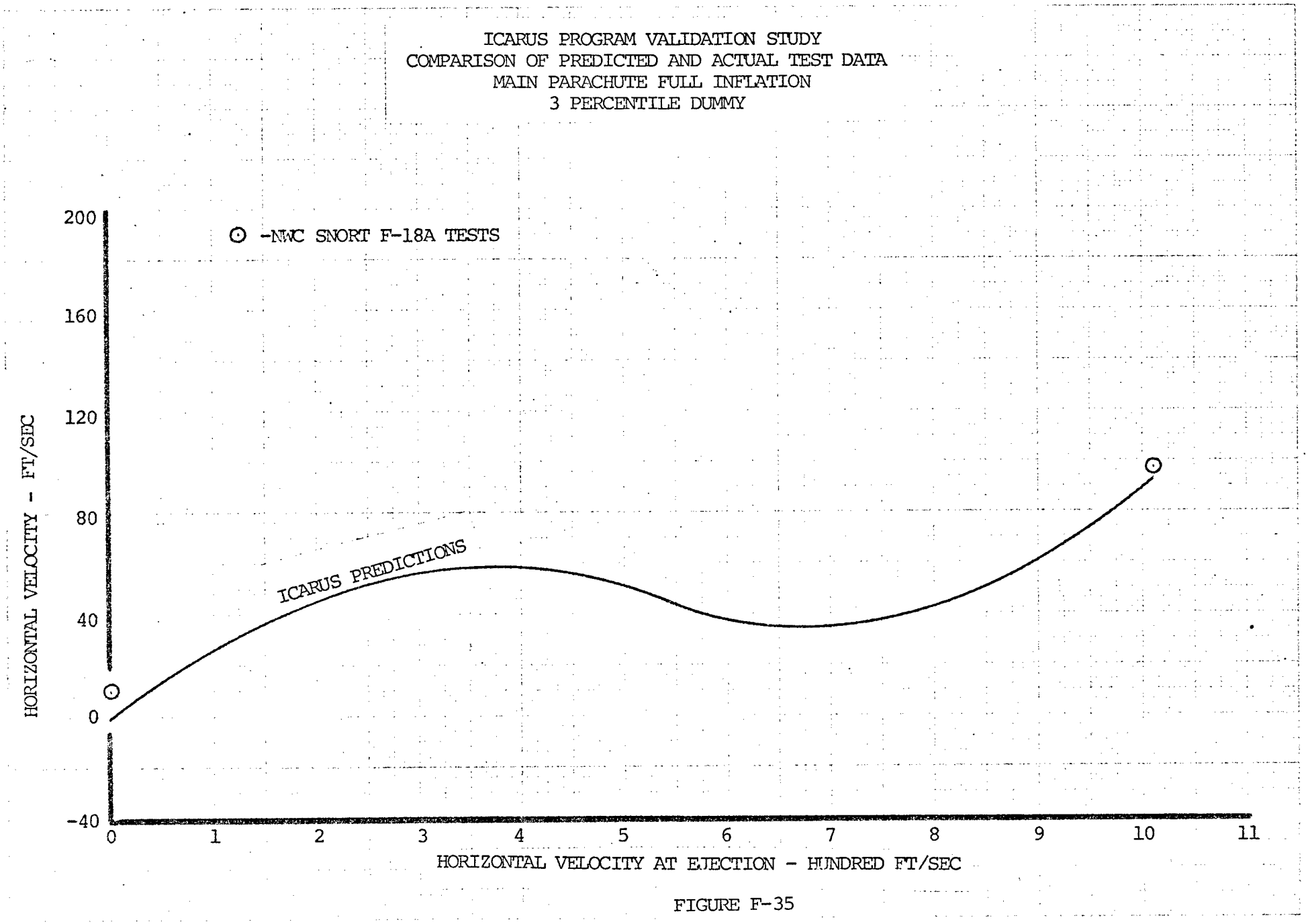

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE FULL INFLATION
3 PERCENTILE DUMMY
⊙ -NWC SNORT F-18A TESTS
ICARUS PREDICTIONS
HORIZONTAL VELOCITY - FT/SEC
200
160
120
80
40
0
-40
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-35

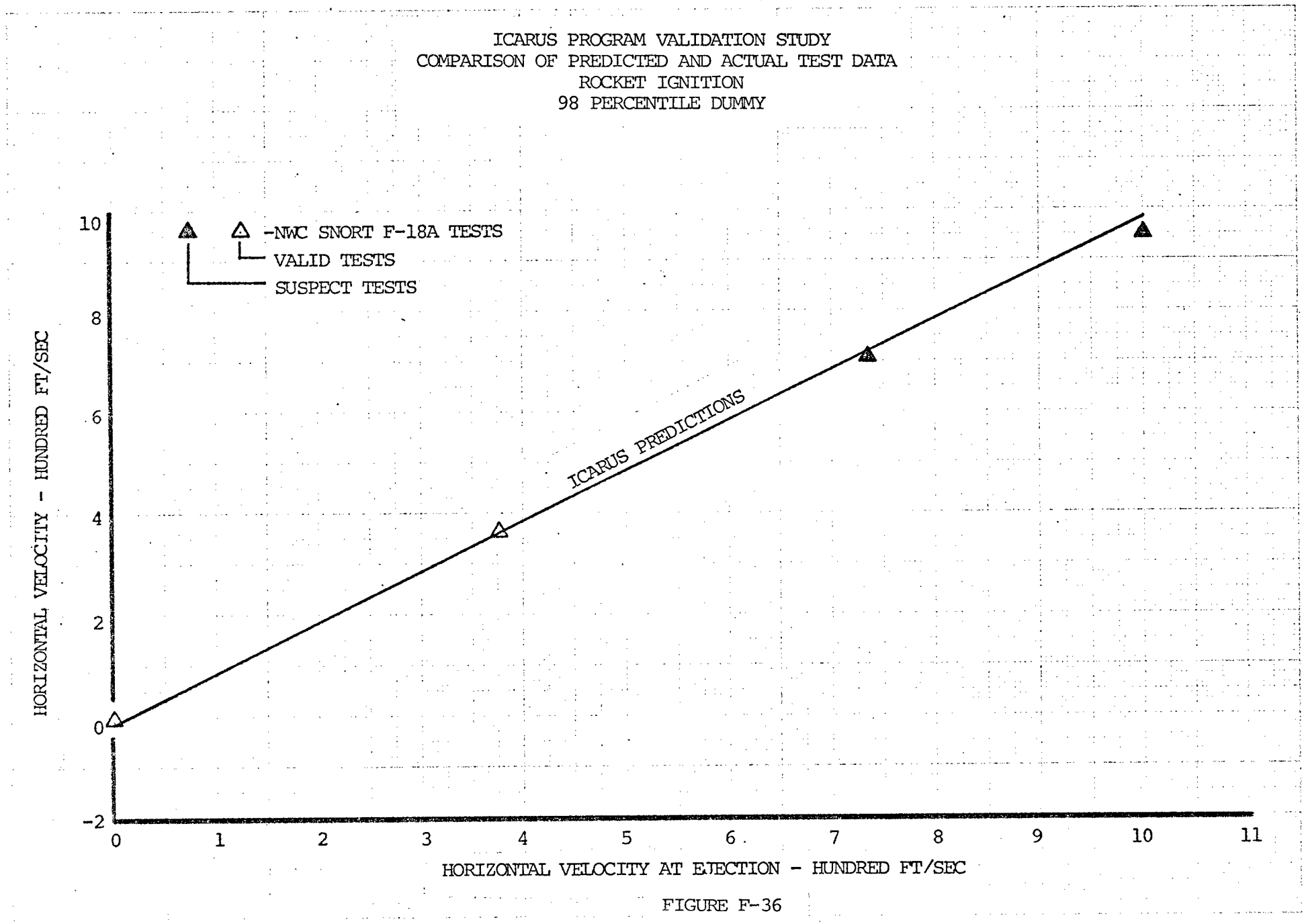

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET IGNITION
98 PERCENTILE DUMMY
-NWC SNORT F-18A TESTS
VALID TESTS
SUSPECT TESTS
ICARUS PREDICTIONS
HORIZONTAL VELOCITY - HUNDRED FT/SEC
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC
10
8
6
4
2
0
-2
0
1
2
3
4
5
6
7
8
9
10
11

FIGURE F-36

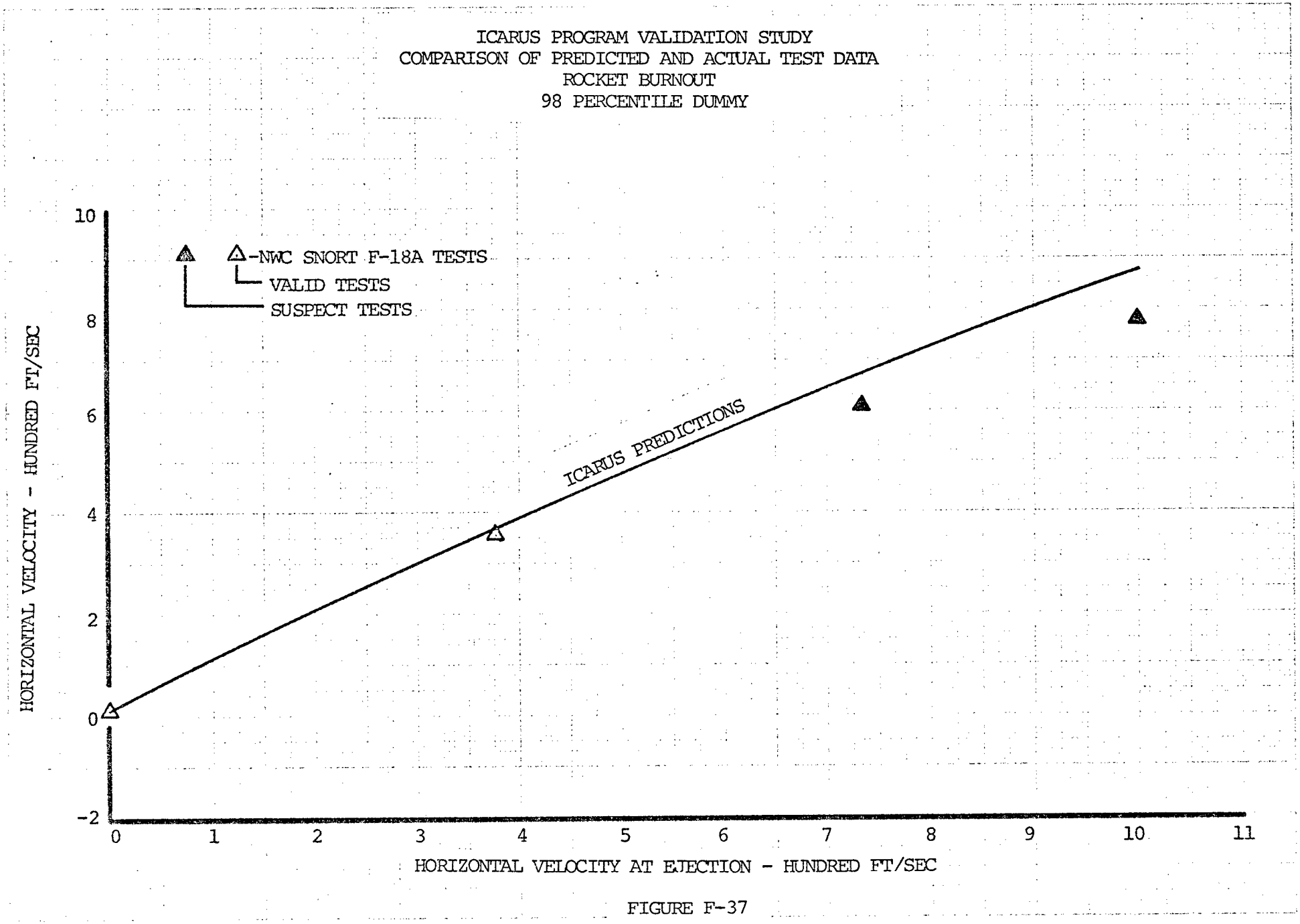

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET BURNOUT
98 PERCENTILE DUMMY
△-NWC SNORT F-18A TESTS
VALID TESTS
SUSPECT TESTS
ICARUS PREDICTIONS
HORIZONTAL VELOCITY - HUNDRED FT/SEC
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC
10
8
6
4
2
0
-2
0
1
2
3
4
5
6
7
8
9
10
11

FIGURE F-37

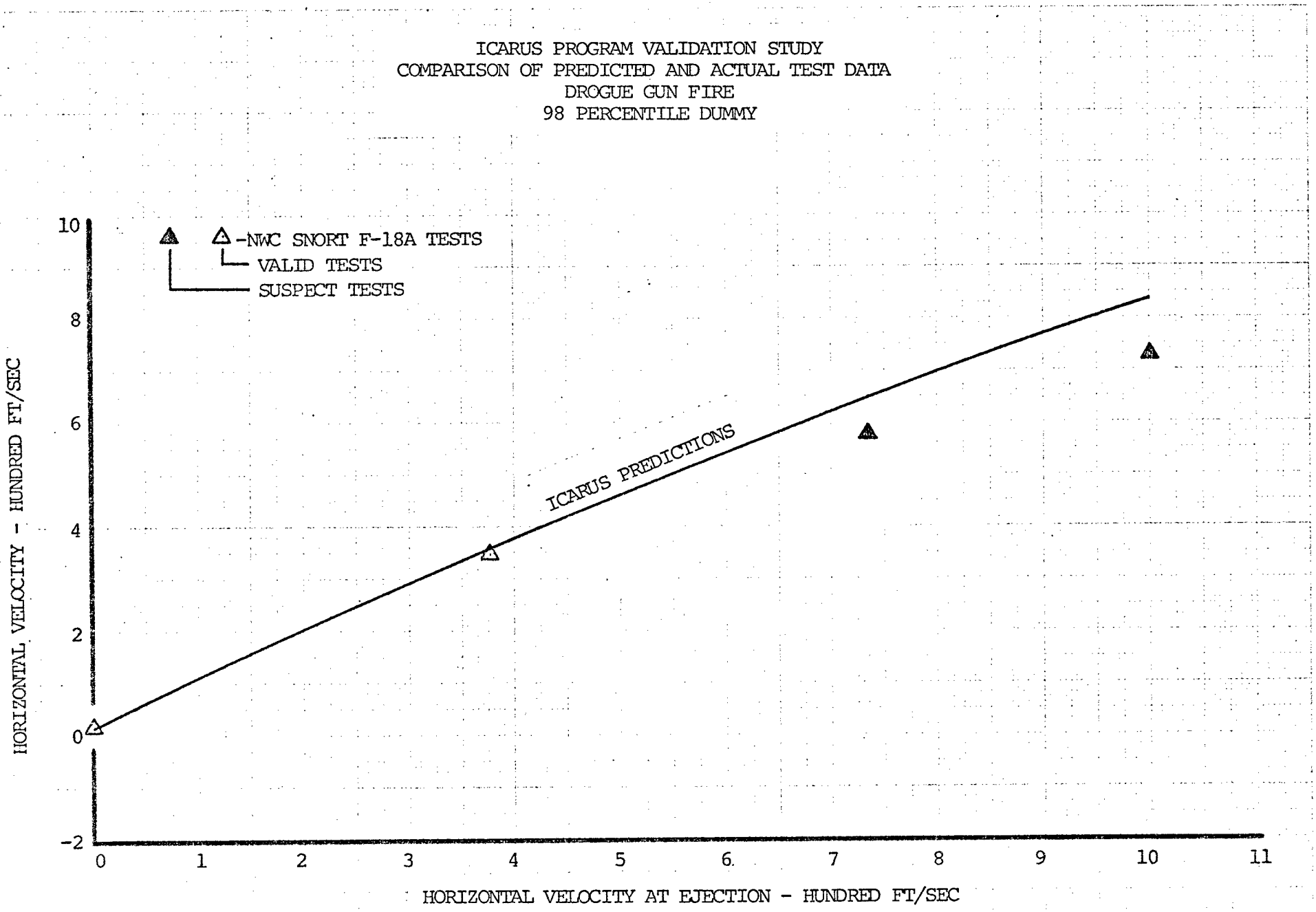

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE GUN FIRE
98 PERCENTILE DUMMY
-NWC SNORT F-18A TESTS
VALID TESTS
SUSPECT TESTS
ICARUS PREDICTIONS
HORIZONTAL VELOCITY - HUNDRED FT/SEC
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC
10
8
6
4
2
0
-2
0
1
2
3
4
5
6
7
8
9
10
11

FIGURE F-38

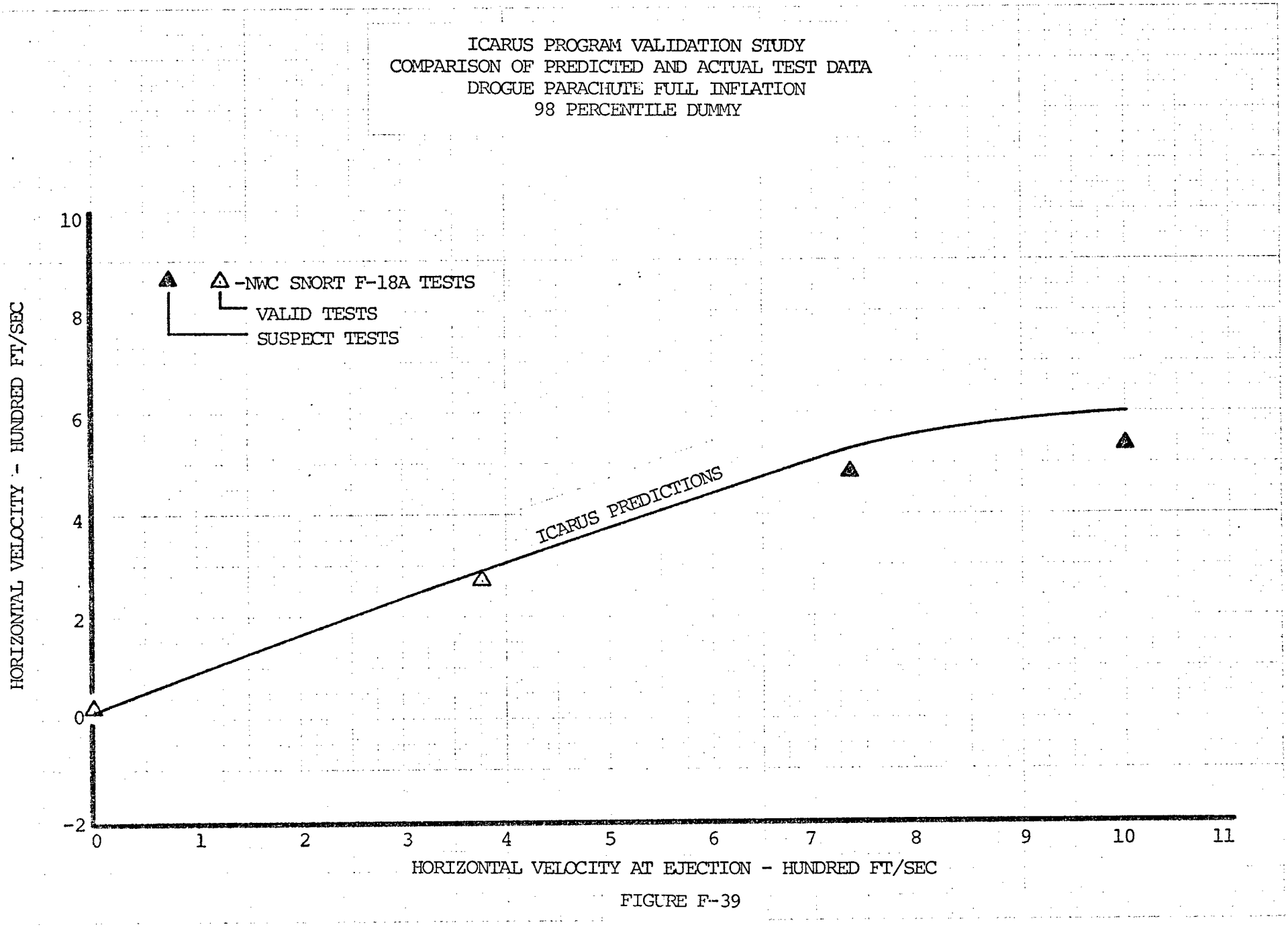

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE PARACHUTE FULL INFLATION
98 PERCENTILE DUMMY
-NWC SNORT F-18A TESTS
VALID TESTS
SUSPECT TESTS
ICARUS PREDICTIONS
HORIZONTAL VELOCITY - HUNDRED FT/SEC
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC
10
8
6
4
2
0
-2
0
1
2
3
4
5
6
7
8
9
10
11

FIGURE F-39

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE PACK OPENING
98 PERCENTILE DUMMY

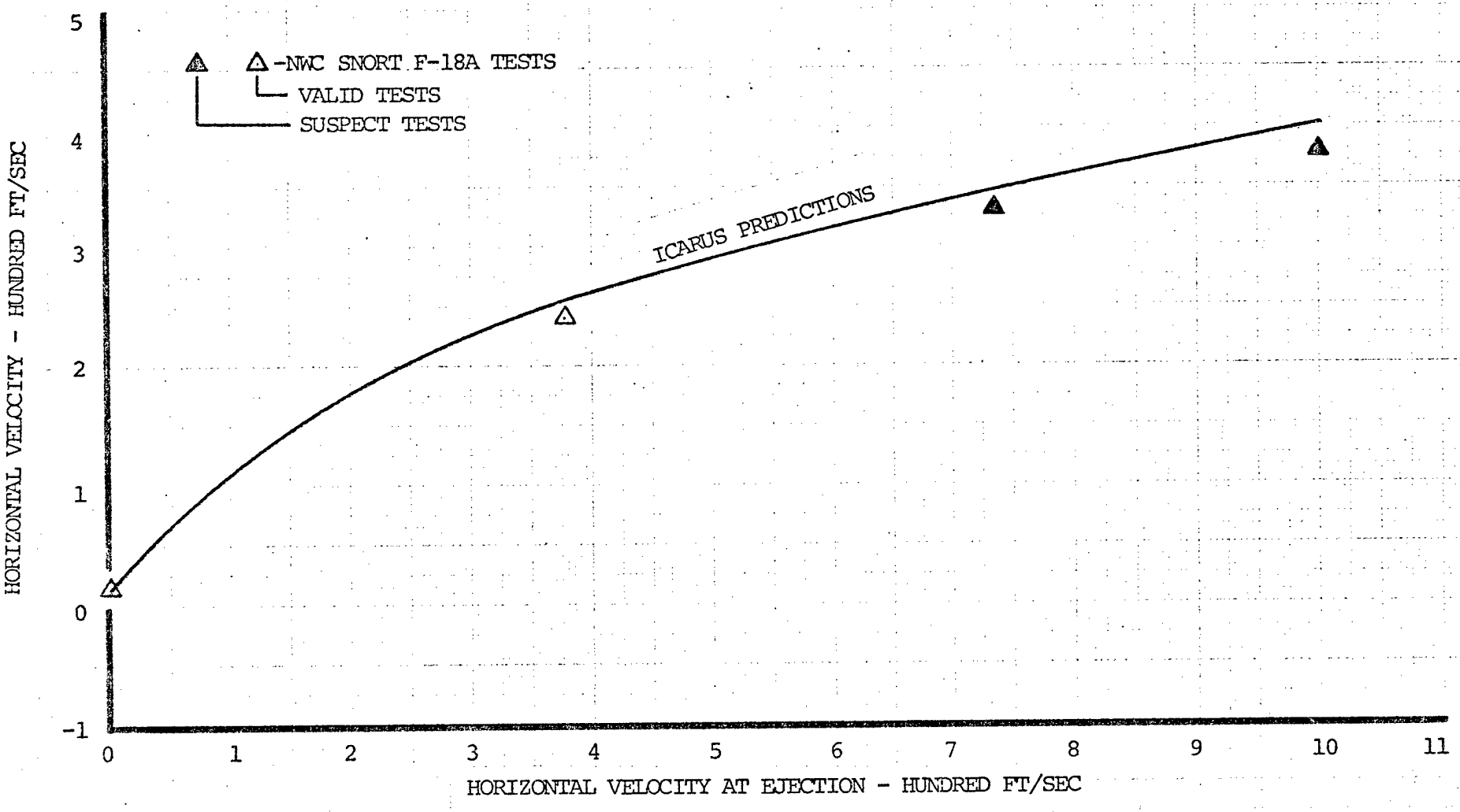


FIGURE F-40

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE RISER LINE STRETCH
98 PERCENTILE DUMMY

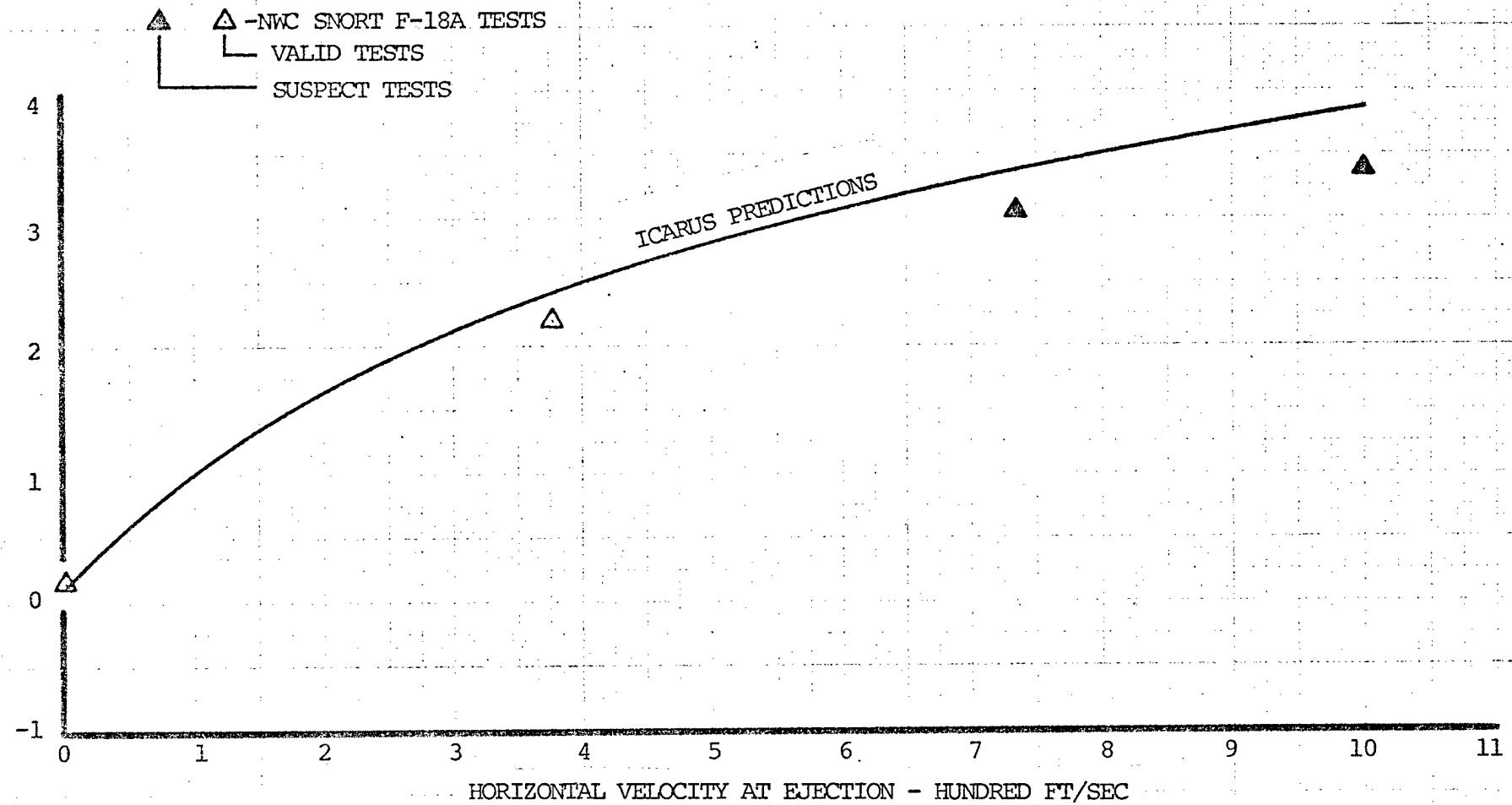


FIGURE F-41

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE FULL INFLATION
98 PERCENTILE DUMMY

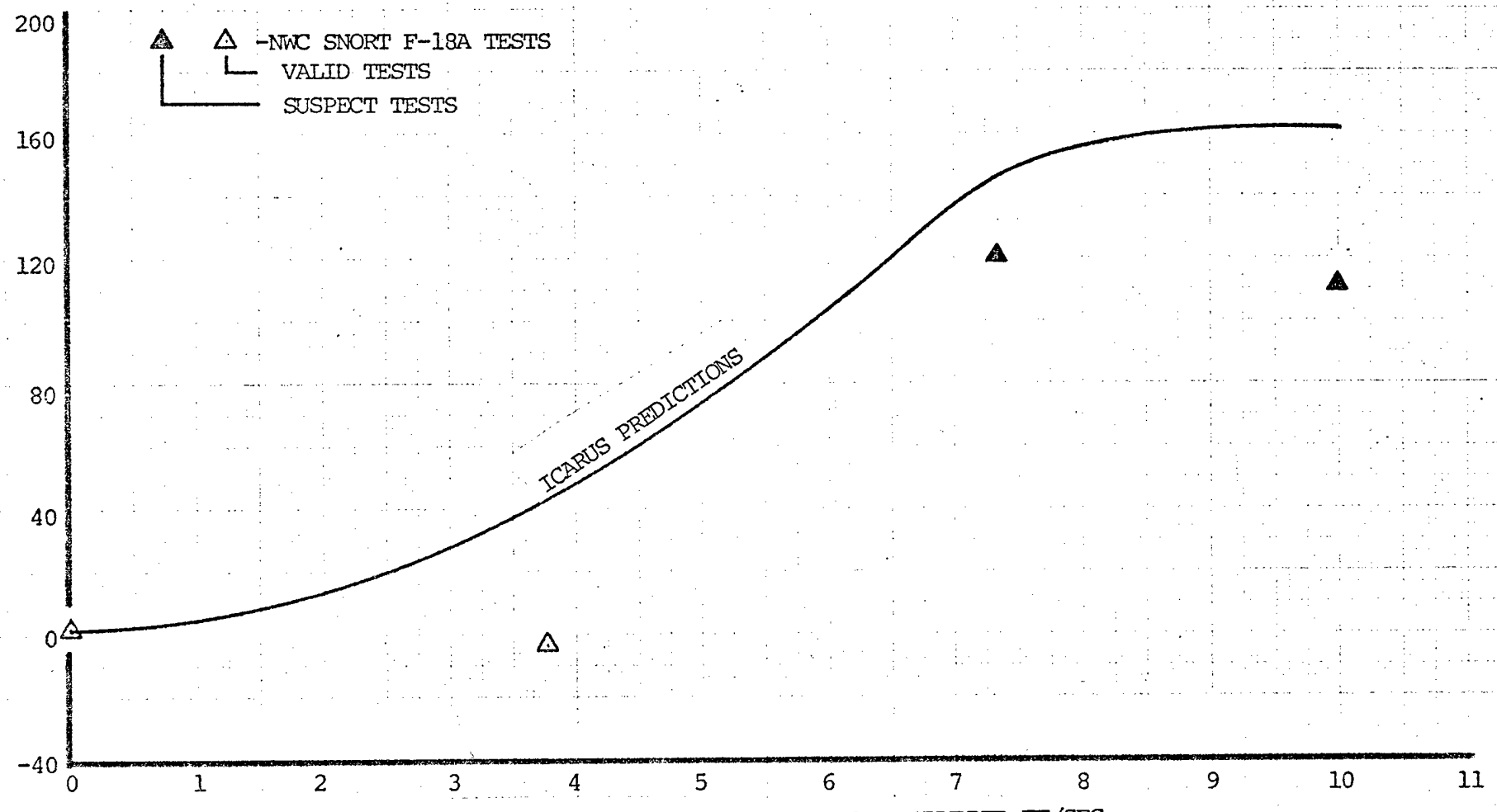


FIGURE F-42

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET IGNITION
3 PERCENTILE DUMMY

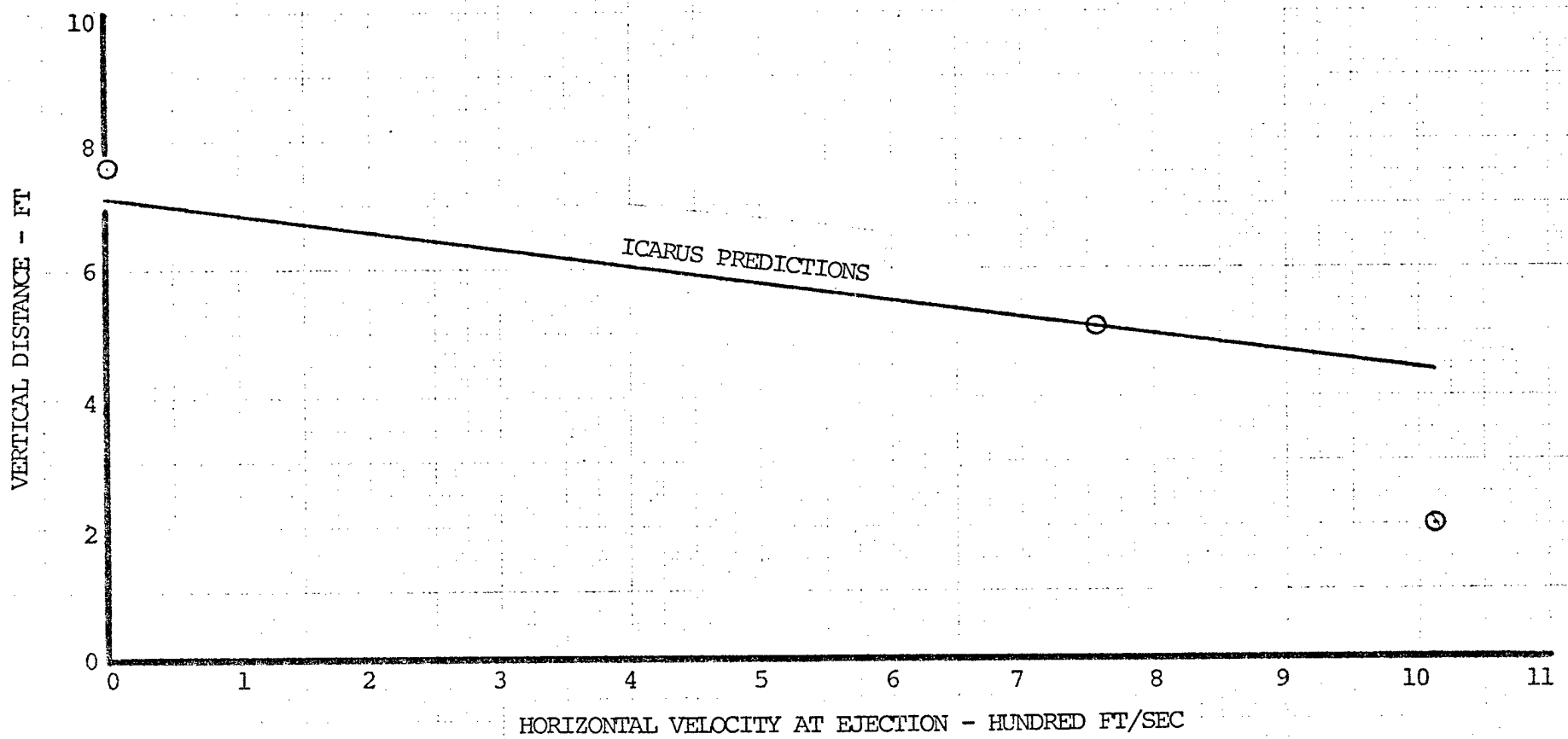


FIGURE F-43

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET BURNOUT
3 PERCENTILE DUMMY

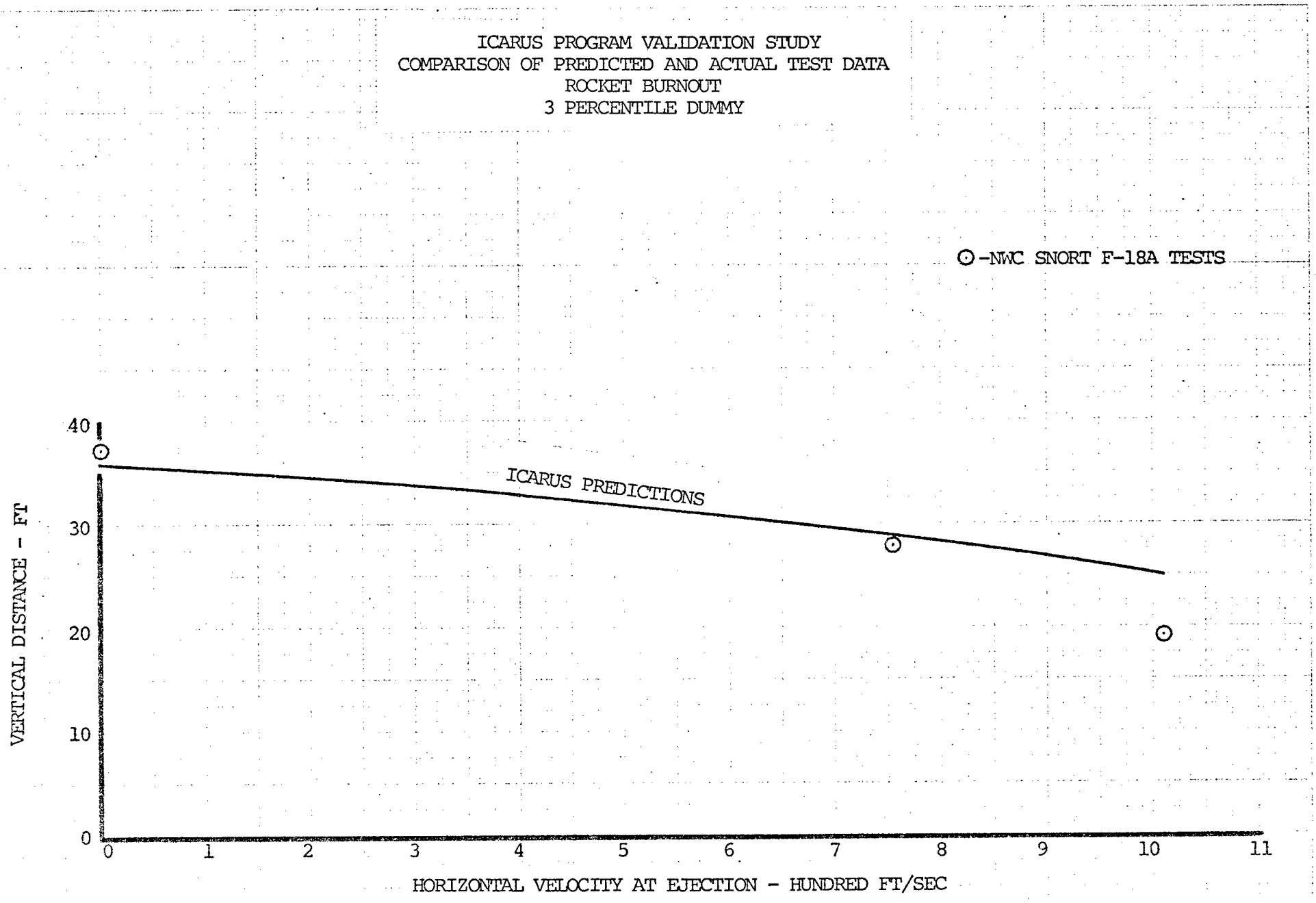


FIGURE F--44

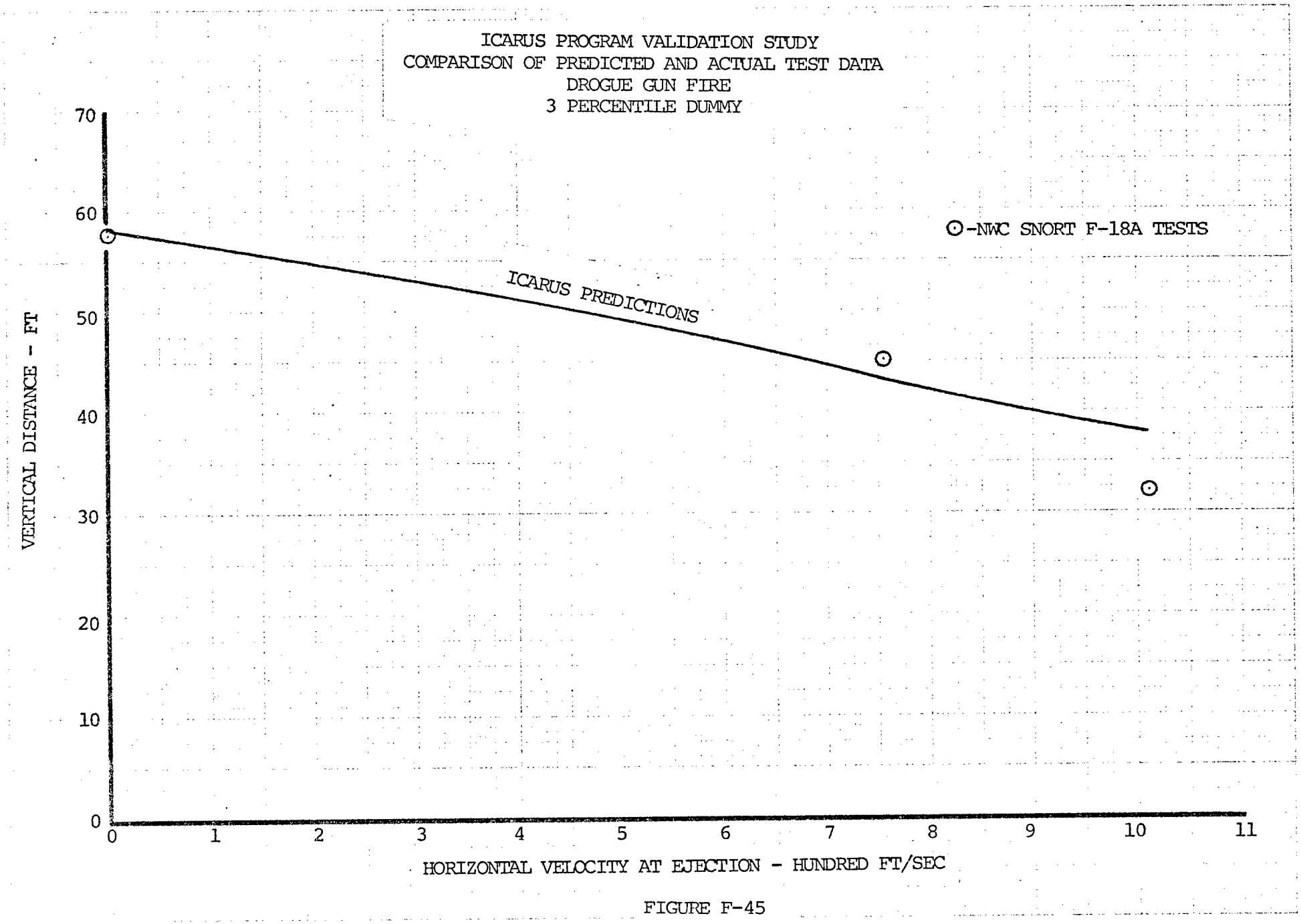

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE GUN FIRE
3 PERCENTILE DUMMY
⊙-NWC SNORT F-18A TESTS
ICARUS PREDICTIONS
VERTICAL DISTANCE - FT
70
60
50
40
30
20
10
0
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-45

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE PARACHUTE FULL INFLATION
3 PERCENTILE DUMMY

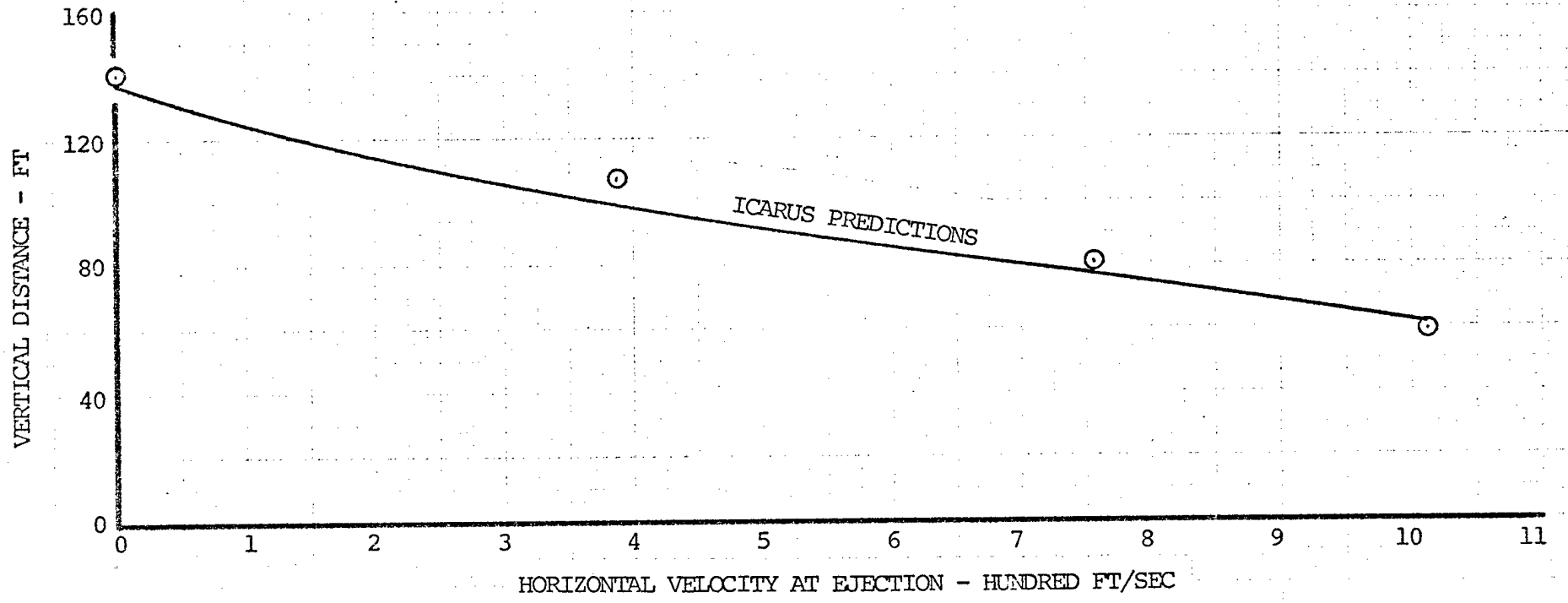


FIGURE F-46

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE PACK OPENING
3 PERCENTILE DUMMY

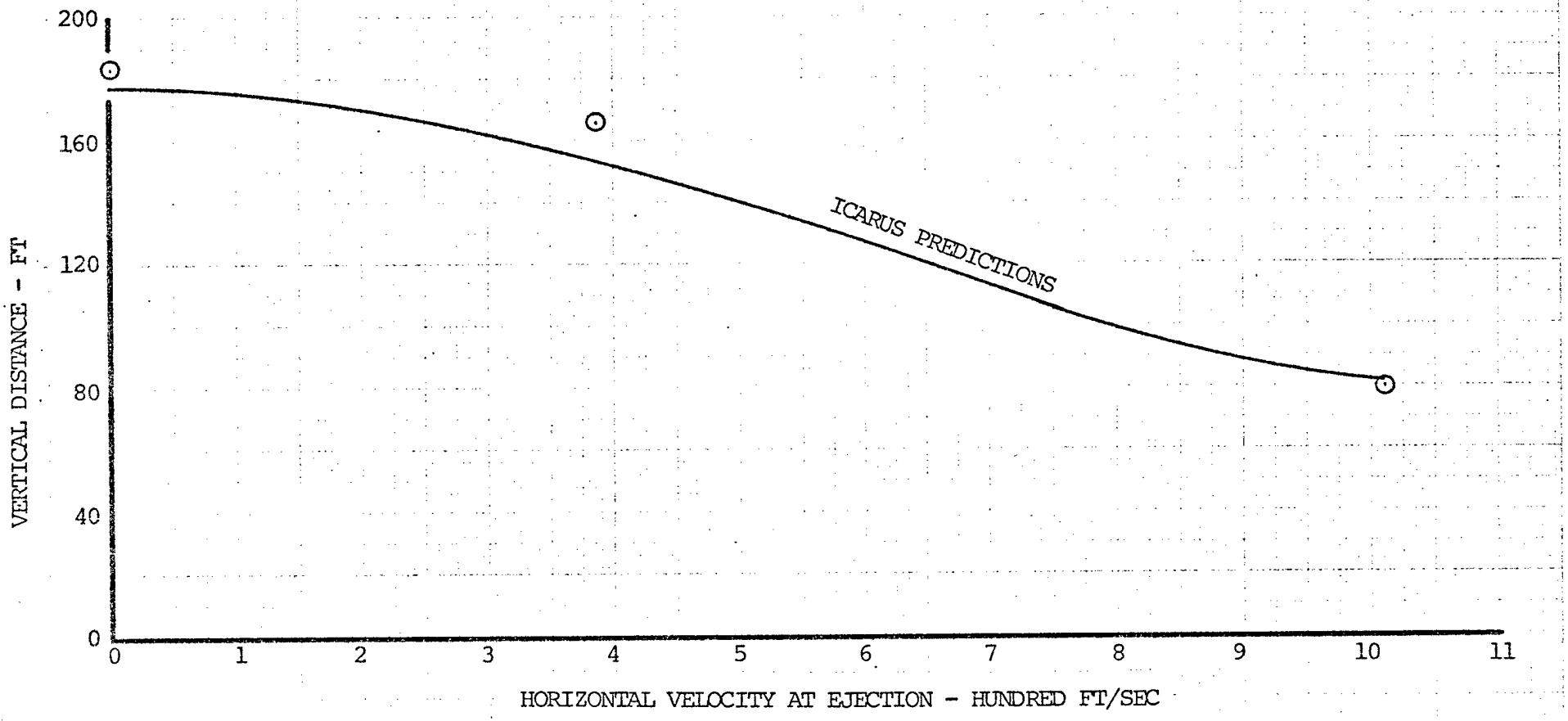


FIGURE F-47

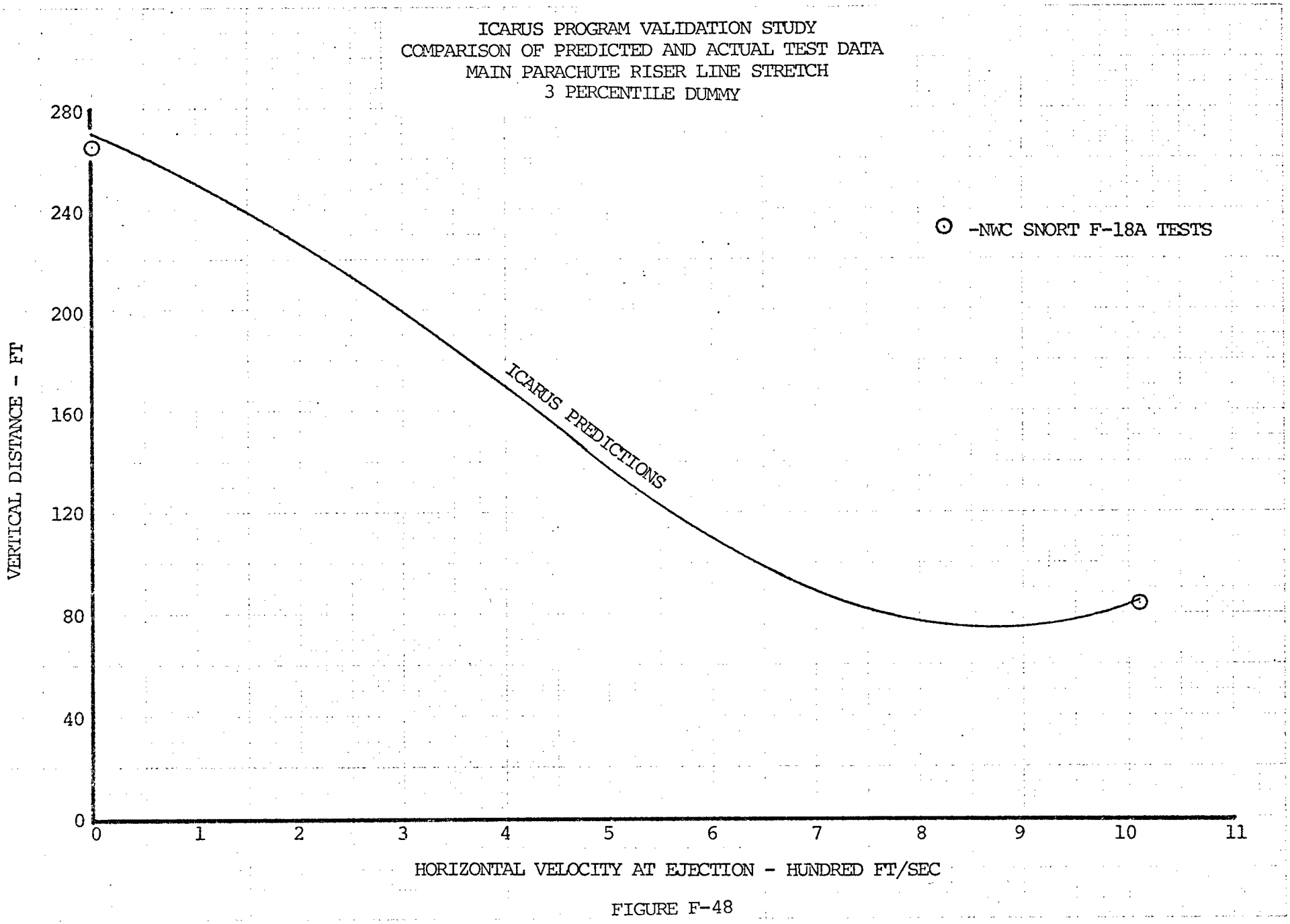

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE RISER LINE STRETCH
3 PERCENTILE DUMMY
-NWC SNORT F-18A TESTS
ICARUS PREDICTIONS
VERTICAL DISTANCE - FT
280
240
200
160
120
80
40
0
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-48

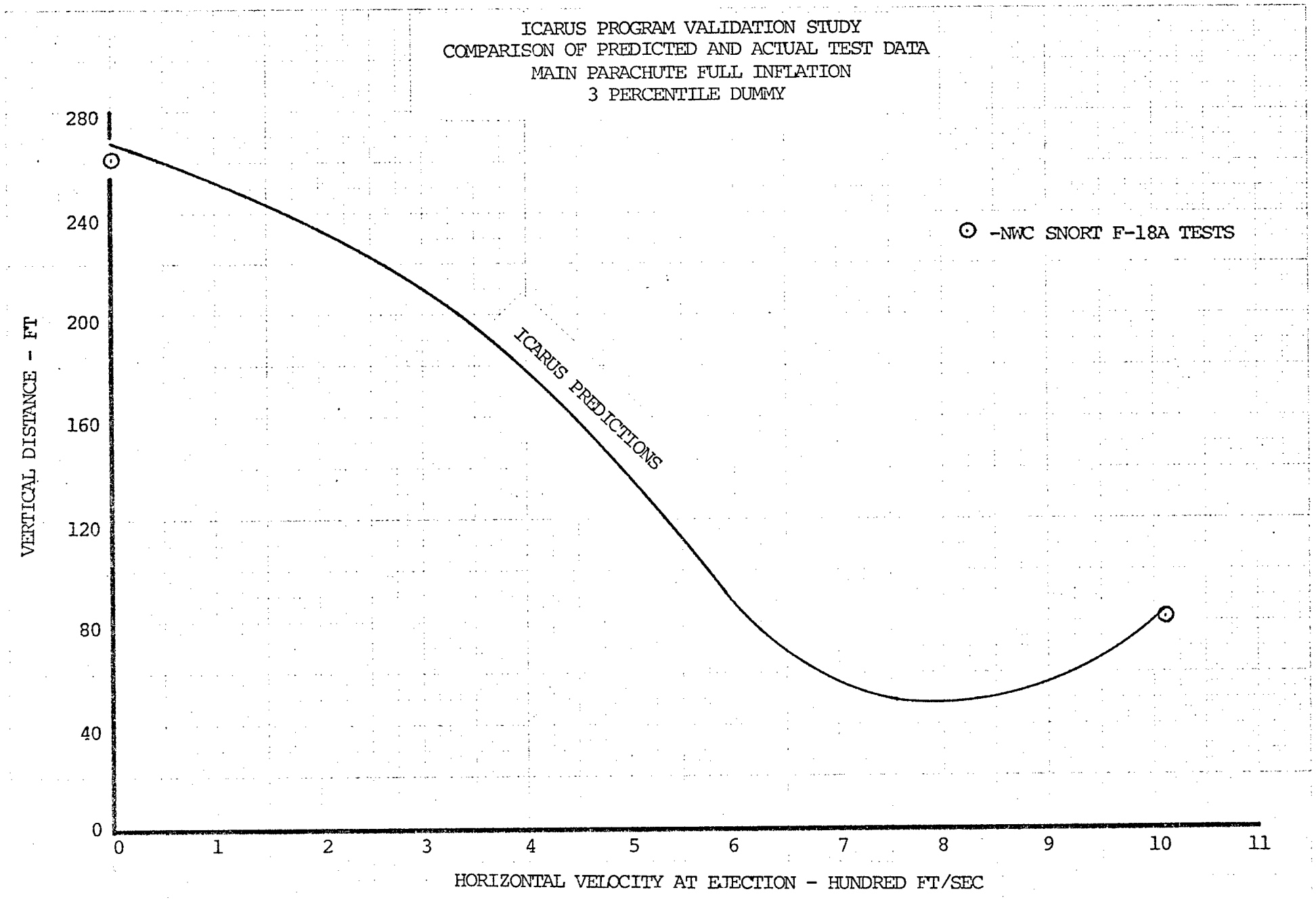

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE FULL INFLATION
3 PERCENTILE DUMMY
⊙ -NWC SNORT F-18A TESTS
ICARUS PREDICTIONS
VERTICAL DISTANCE - FT
280
240
200
160
120
80
40
0
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F--49

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET IGNITION
98 PERCENTILE DUMMY

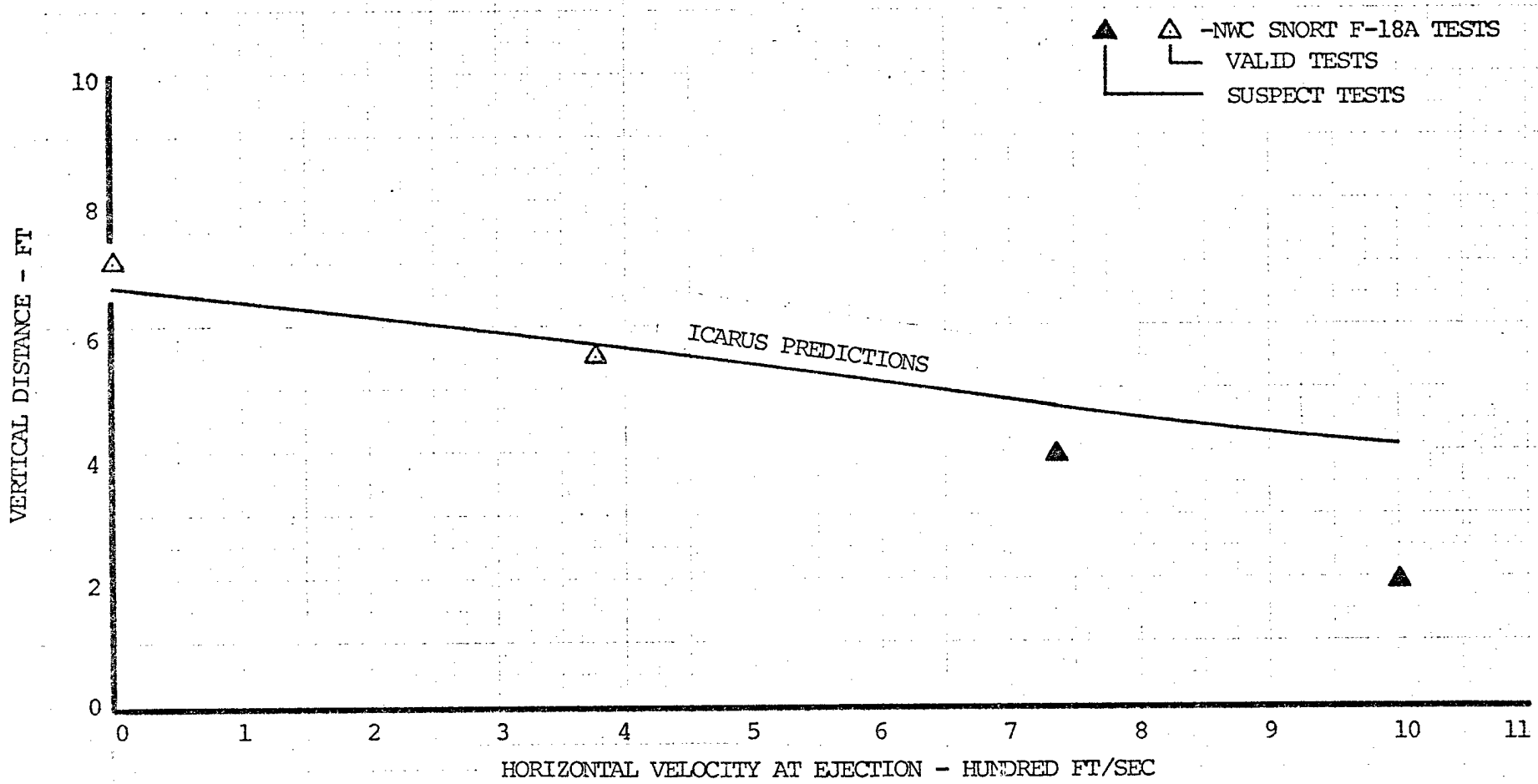


FIGURE F-50

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET BURNOUT
98 PERCENTILE DUMMY

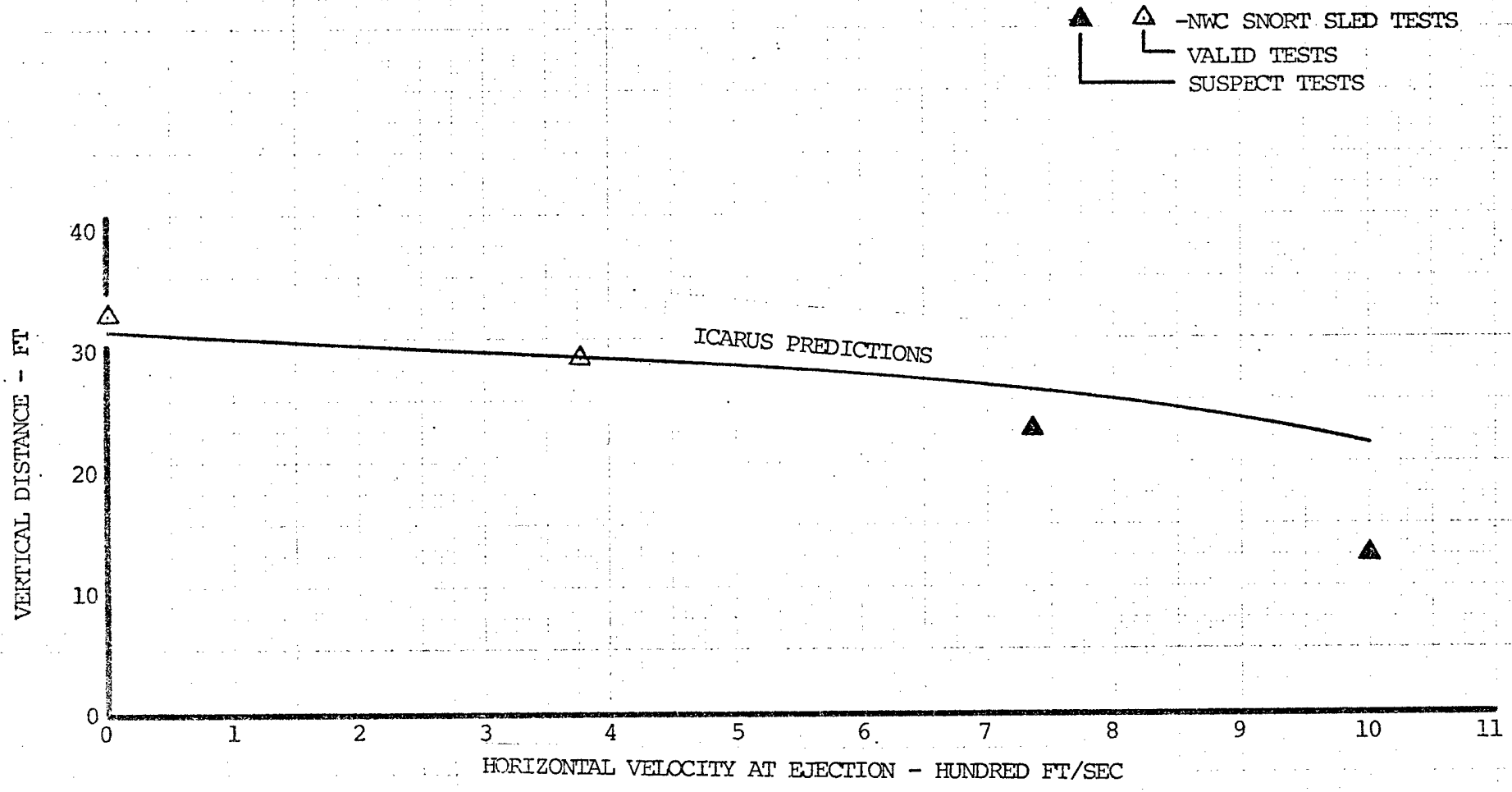


FIGURE F-51

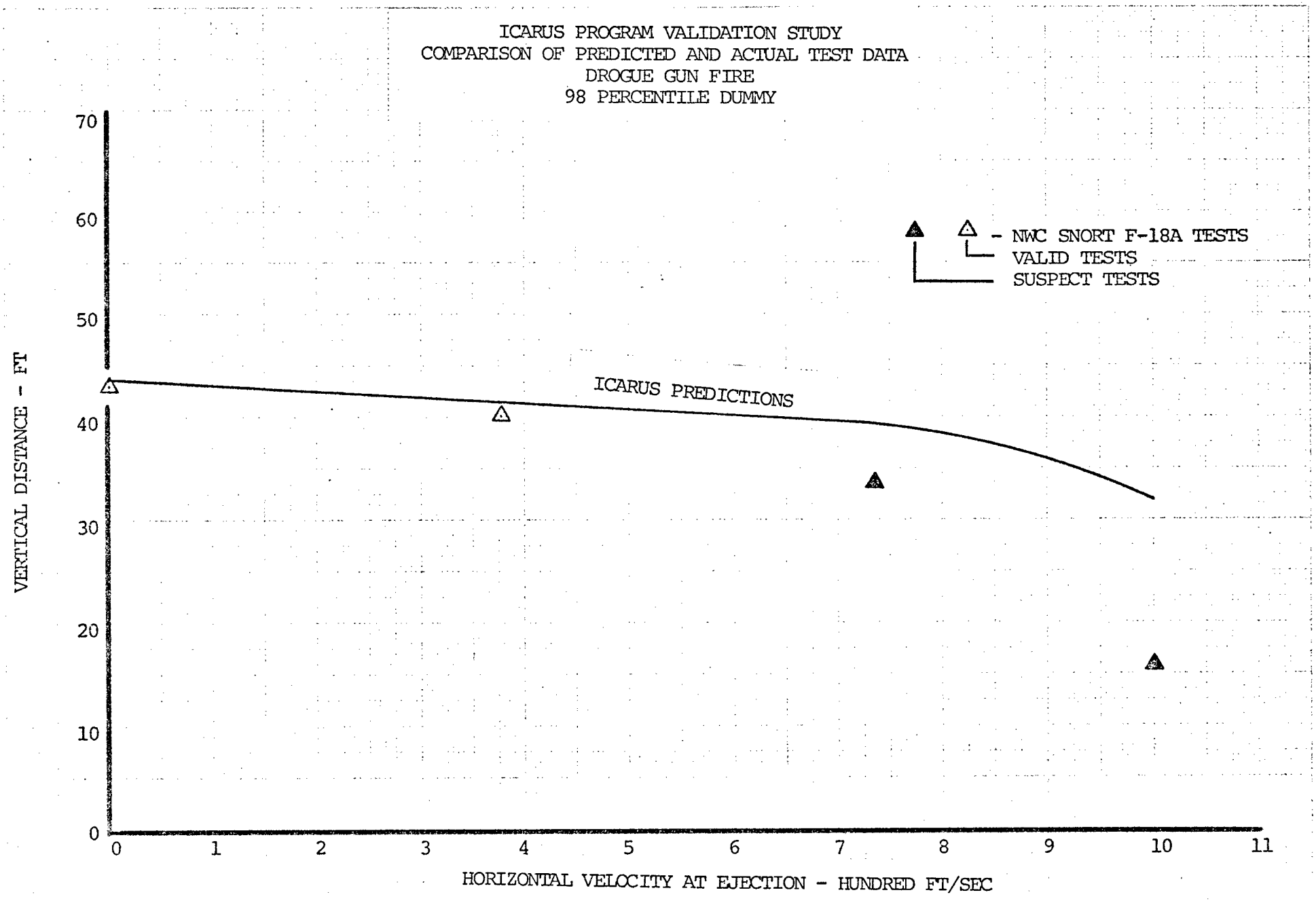

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE GUN FIRE
98 PERCENTILE DUMMY
NWC SNORT F-18A TESTS
VALID TESTS
SUSPECT TESTS
ICARUS PREDICTIONS
VERTICAL DISTANCE - FT
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC
0
10
20
30
40
50
60
70
0
1
2
3
4
5
6
7
8
9
10
11

FIGURE F-52

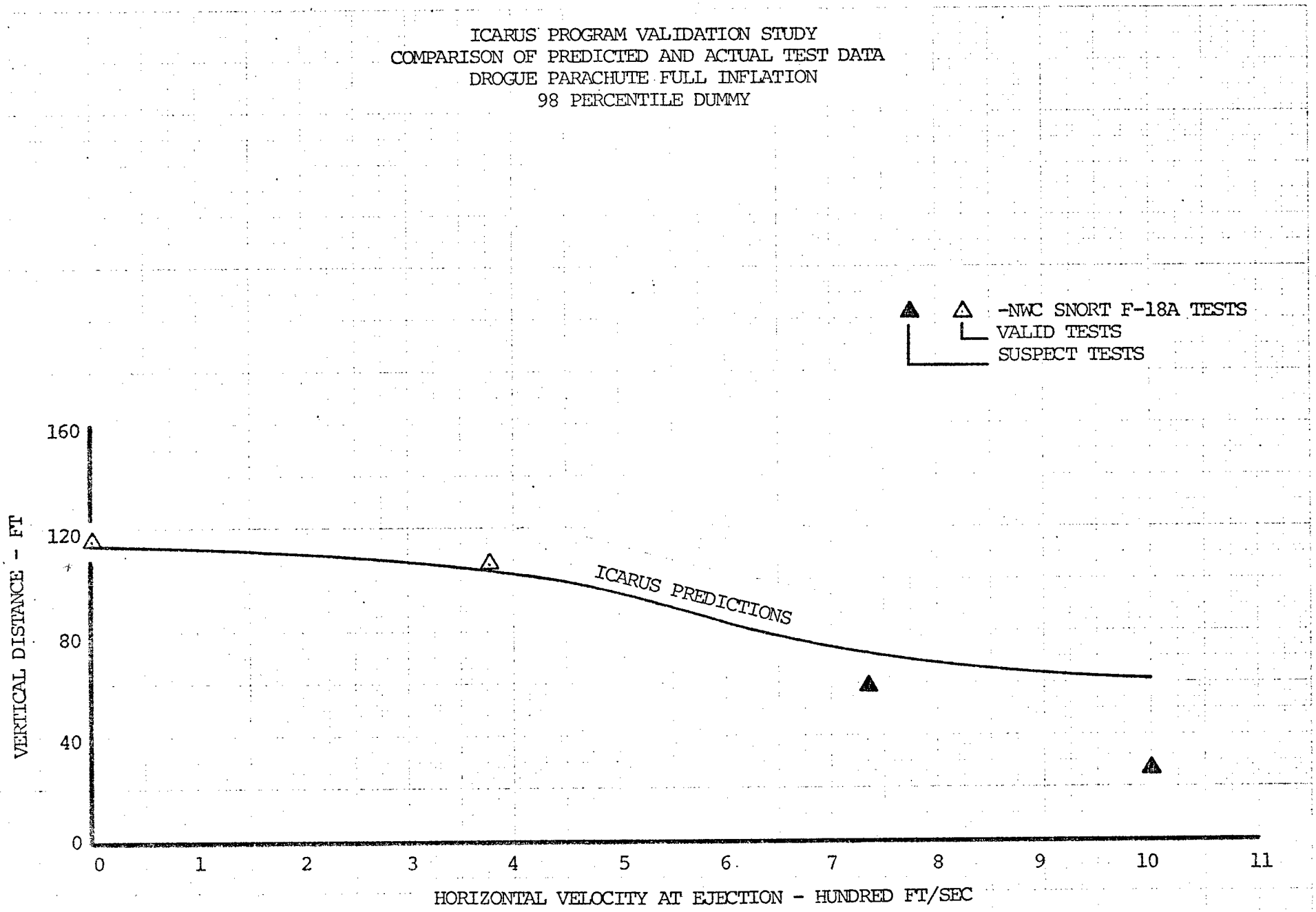

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE PARACHUTE FULL INFLATION
98 PERCENTILE DUMMY
-NWC SNORT F-18A TESTS
VALID TESTS
SUSPECT TESTS
ICARUS PREDICTIONS
VERTICAL DISTANCE - FT
160
120
80
40
0
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-53

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE PACK OPENING
98 PERCENTILE DUMMY

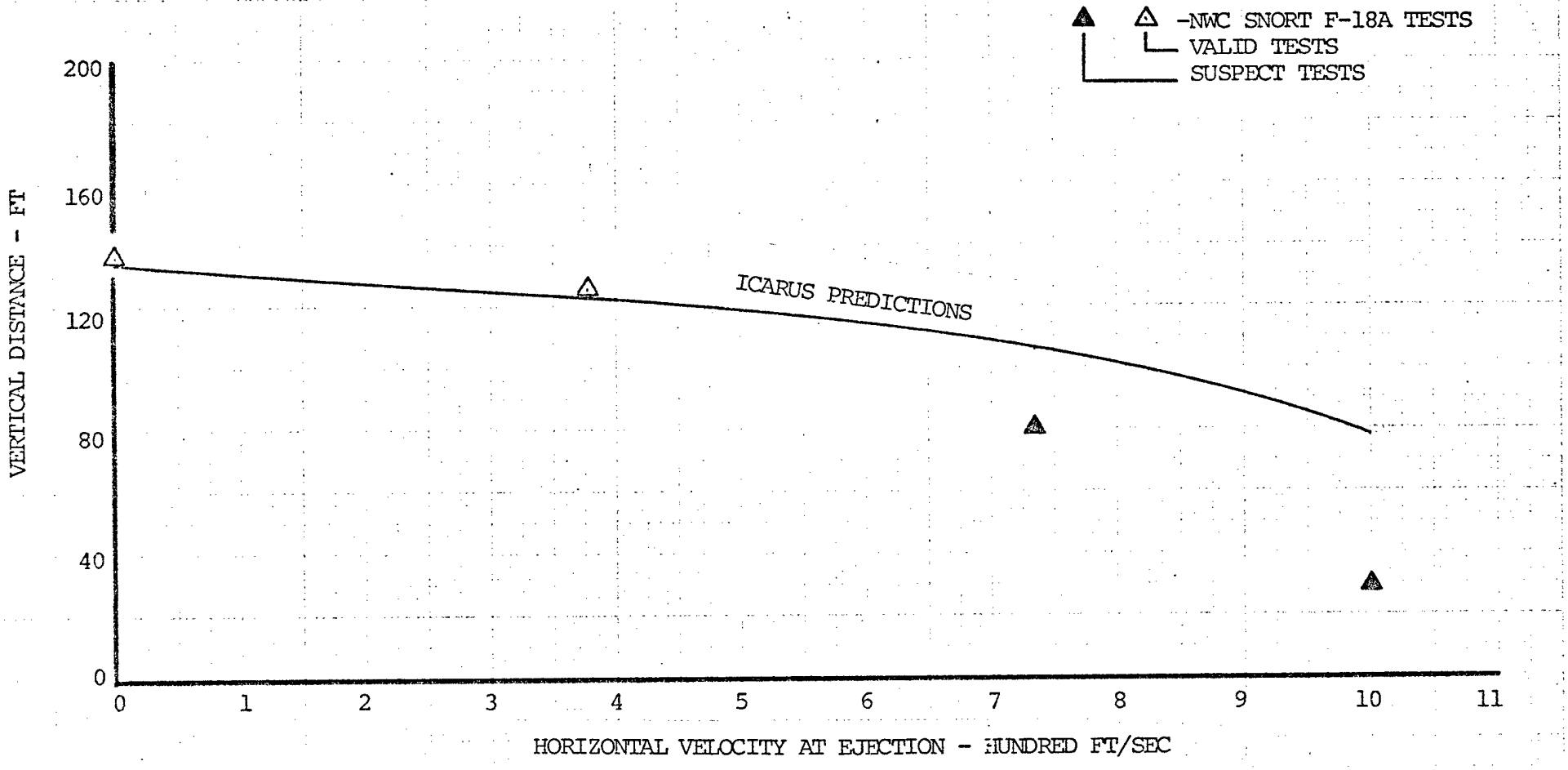


FIGURE F-54

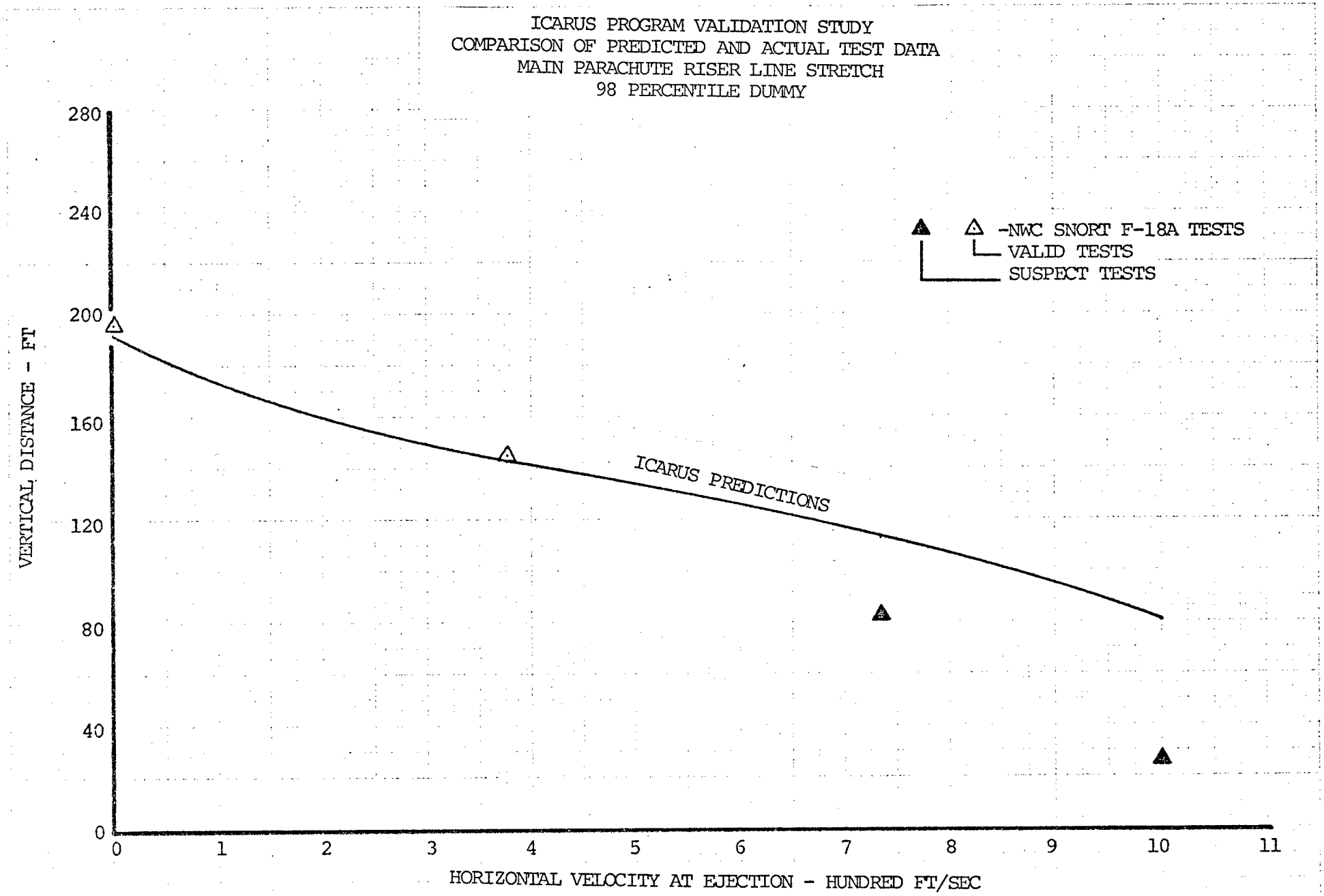

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE RISER LINE STRETCH
98 PERCENTILE DUMMY
VERTICAL DISTANCE - FT
280
240
200
160
120
80
40
0
ICARUS PREDICTIONS
-NWC SNORT F-18A TESTS
VALID TESTS
SUSPECT TESTS
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-55

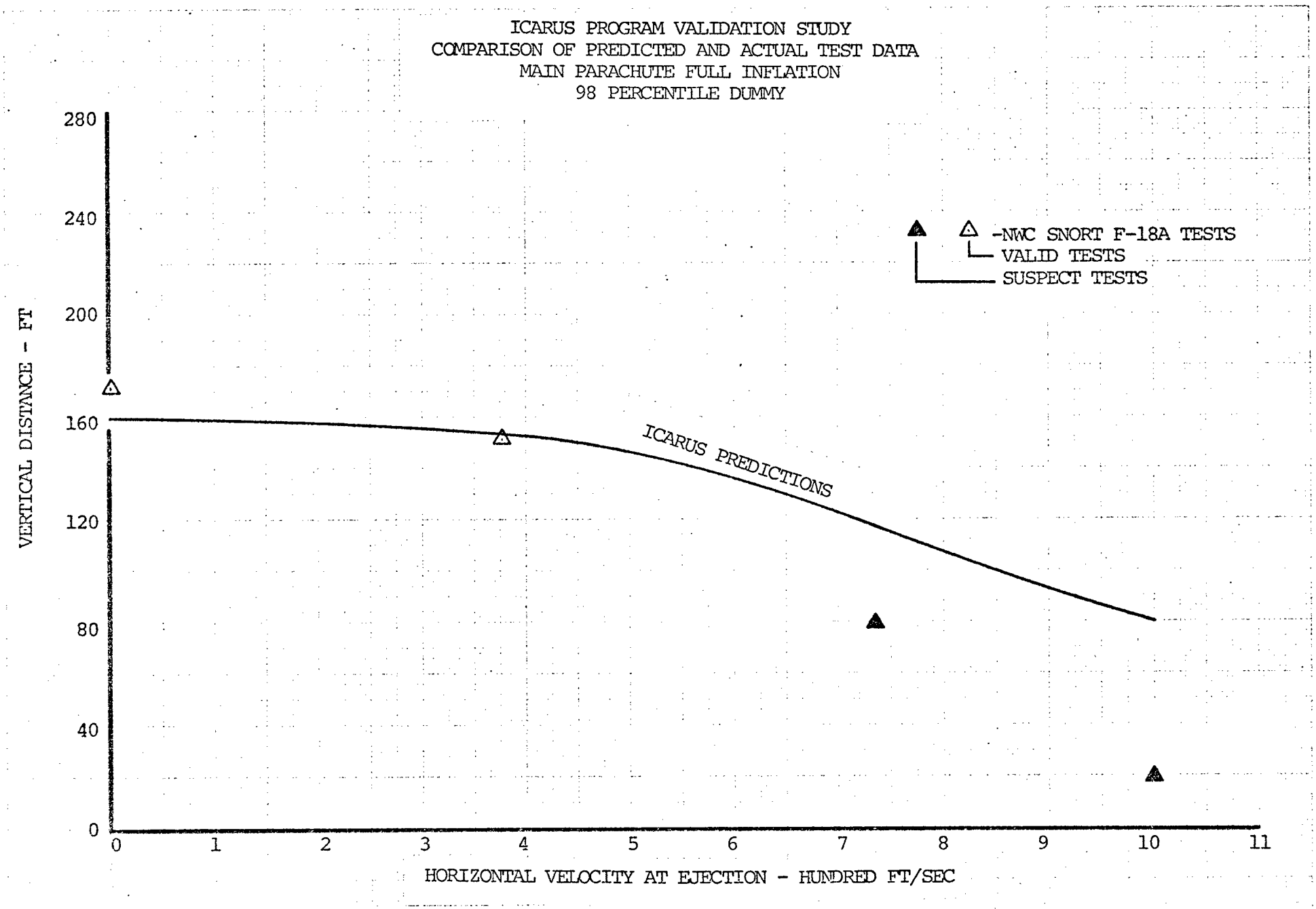

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE FULL INFLATION
98 PERCENTILE DUMMY
-NWC SNORT F-18A TESTS
VALID TESTS
SUSPECT TESTS
ICARUS PREDICTIONS
VERTICAL DISTANCE - FT
280
240
200
160
120
80
40
0
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-56

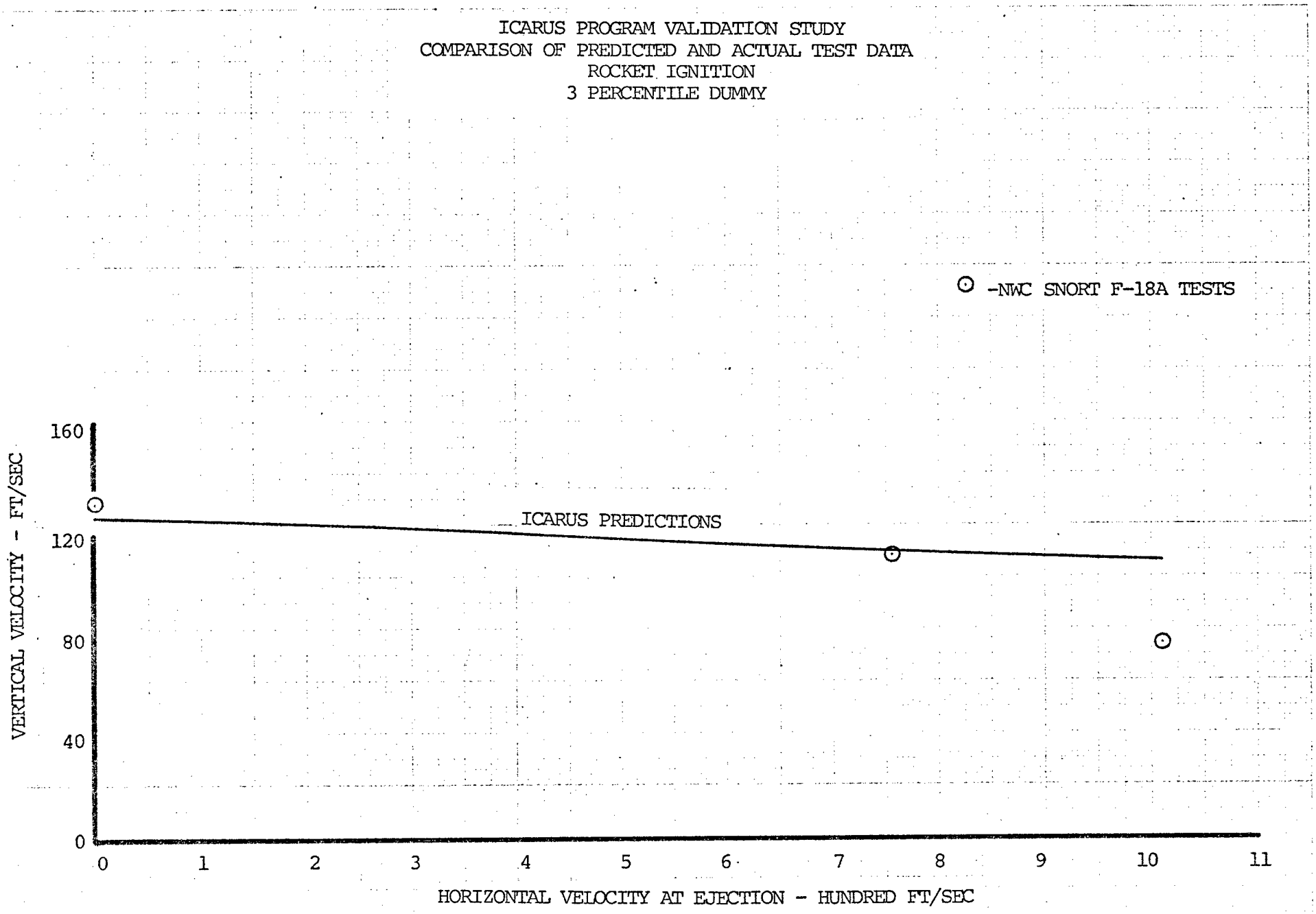

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET IGNITION
3 PERCENTILE DUMMY
⊙ -NWC SNORT F-18A TESTS
ICARUS PREDICTIONS
VERTICAL VELOCITY - FT/SEC
160
120
80
40
0
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-57

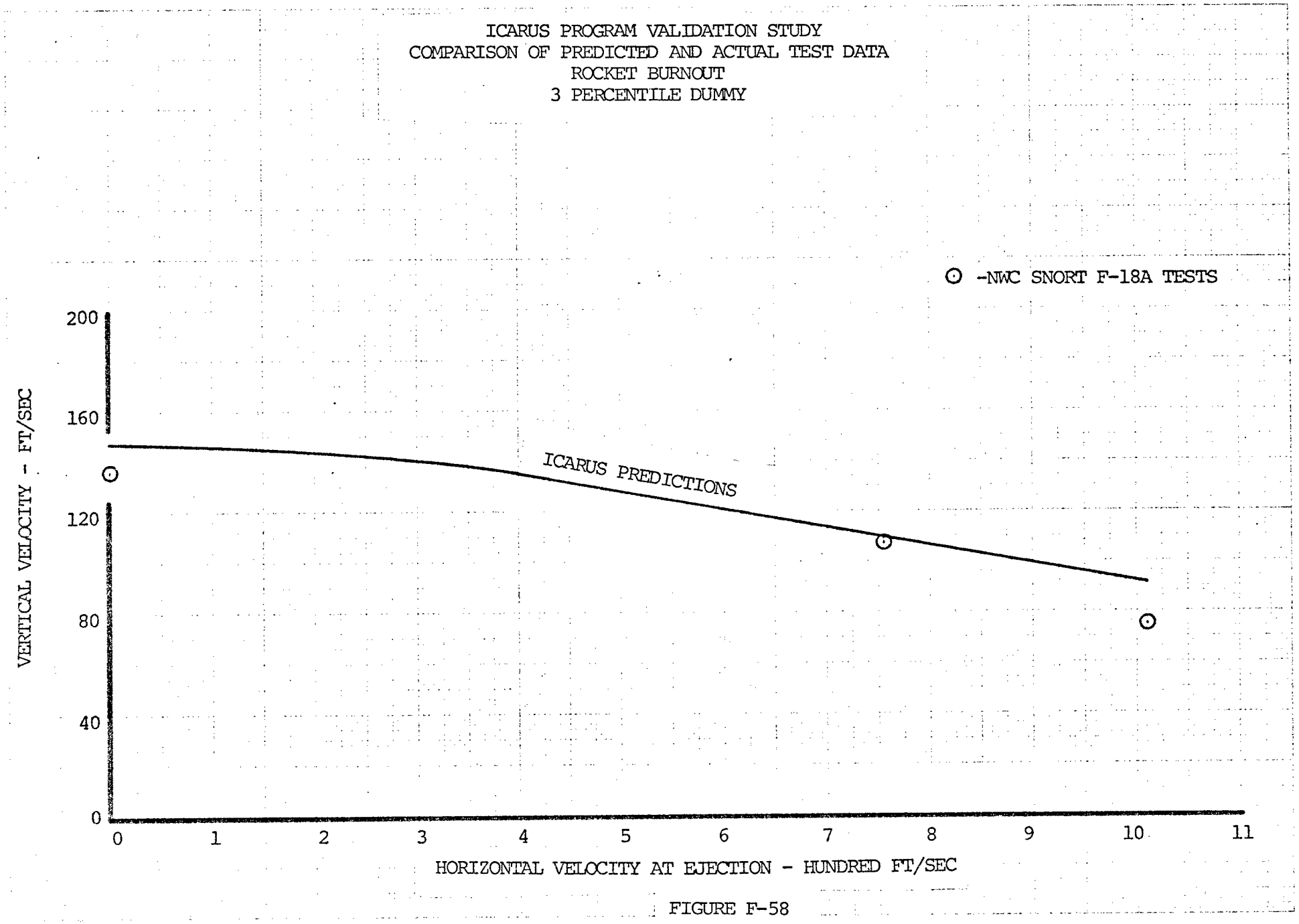

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET BURNOUT
3 PERCENTILE DUMMY
⊙ -NWC SNORT F-18A TESTS
ICARUS PREDICTIONS
VERTICAL VELOCITY - FT/SEC
200
160
120
80
40
0
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-58

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE GUN FIRE
3 PERCENTILE DUMMY

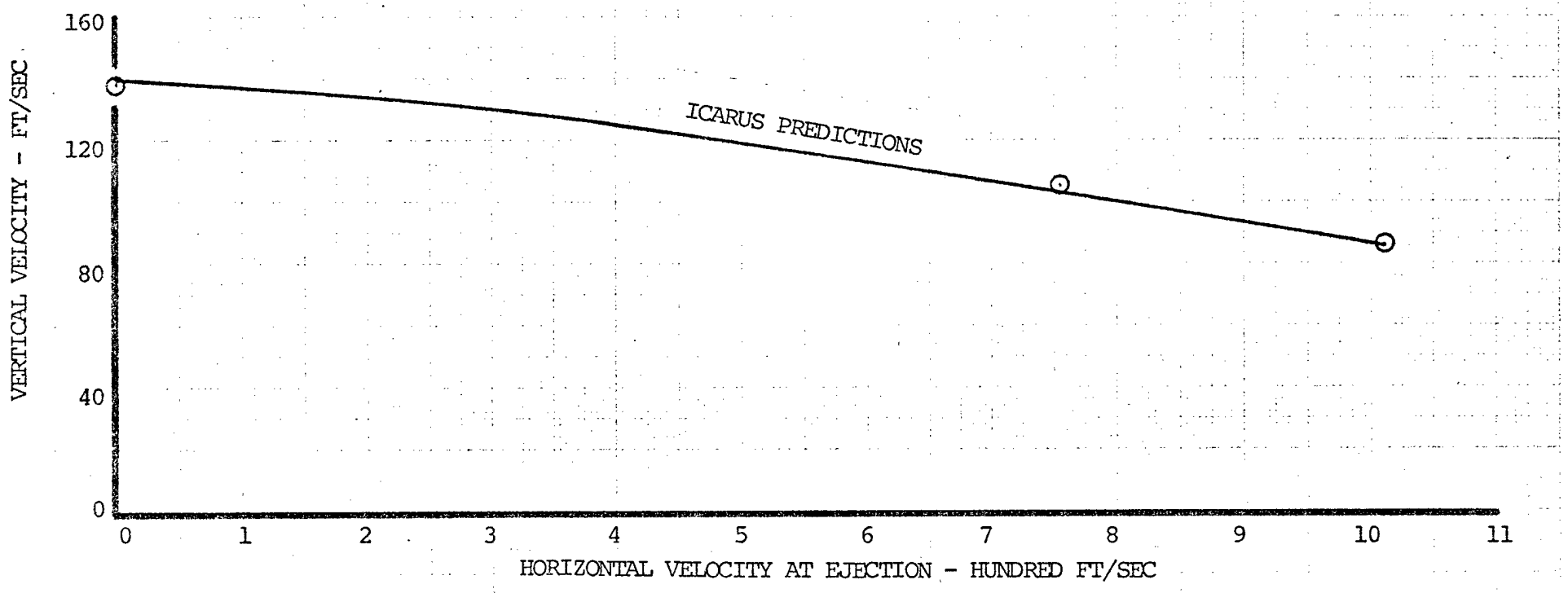


FIGURE F-59

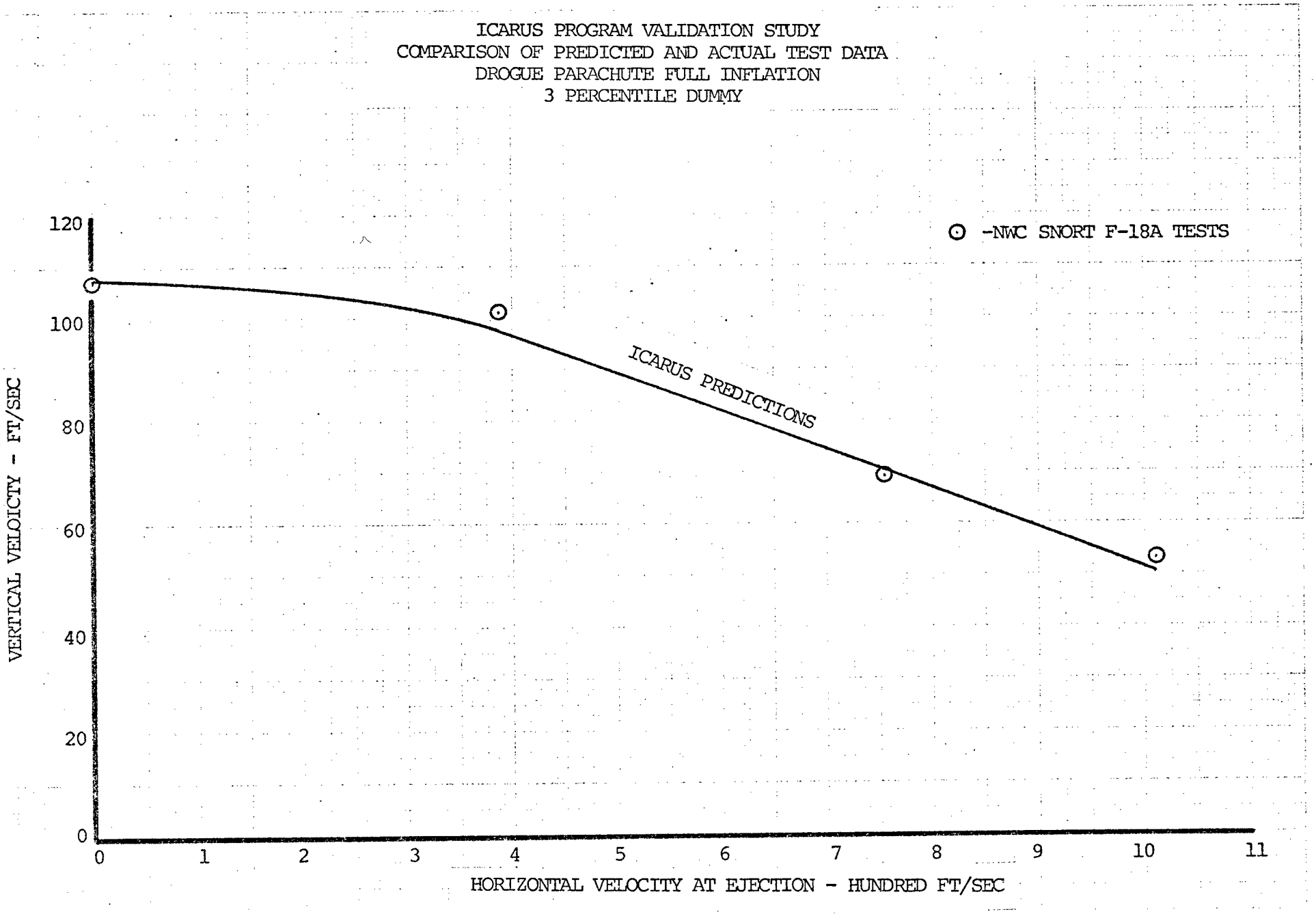

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE PARACHUTE FULL INFLATION
3 PERCENTILE DUMMY
⊙ -NWC SNORT F-18A TESTS
ICARUS PREDICTIONS
VERTICAL VELOICTY - FT/SEC
120
100
80
60
40
20
0
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-60

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE PACK OPENING
3 PERCENTILE DUMMY

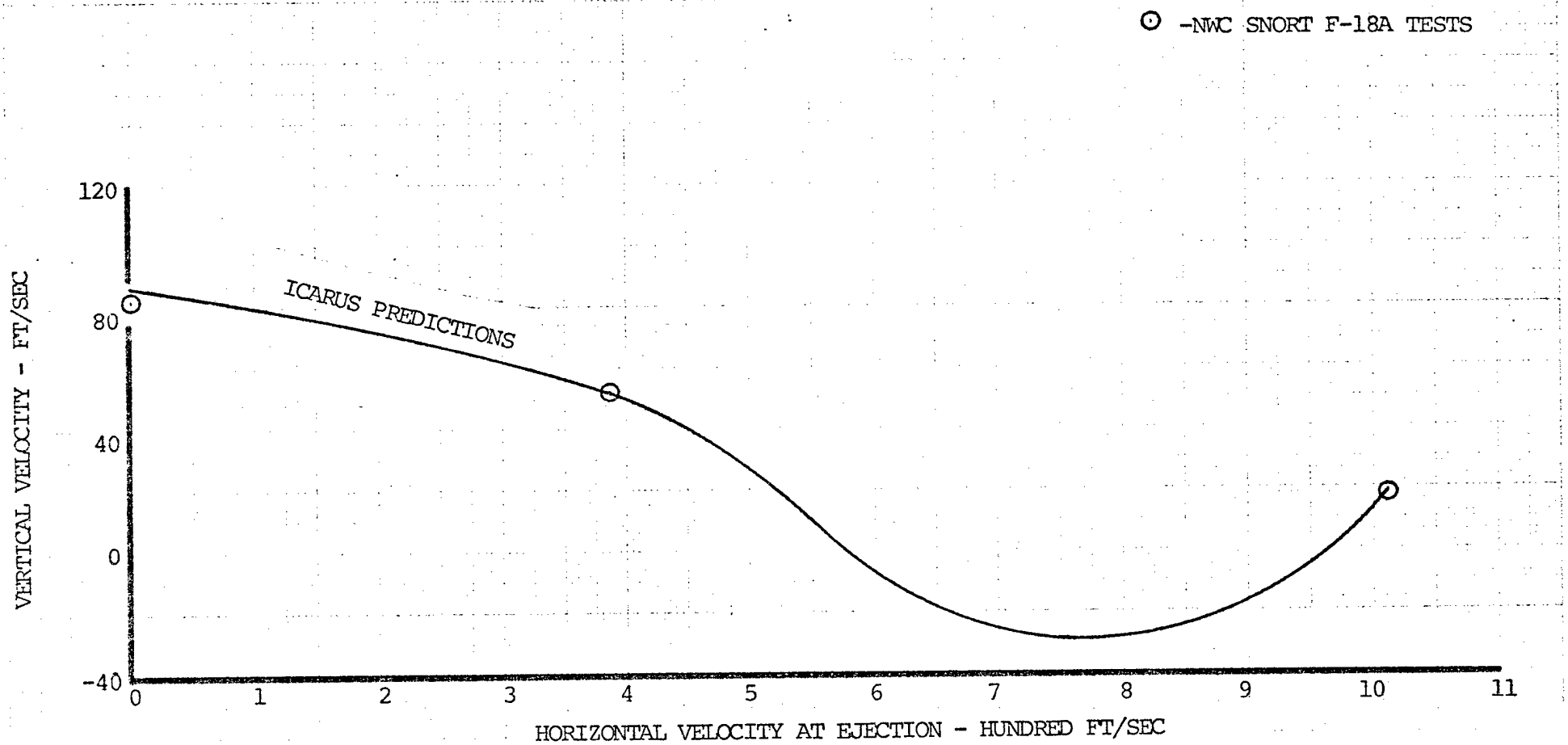


FIGURE F-61

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE RISER LINE STRETCH
3 PERCENTILE DUMMY

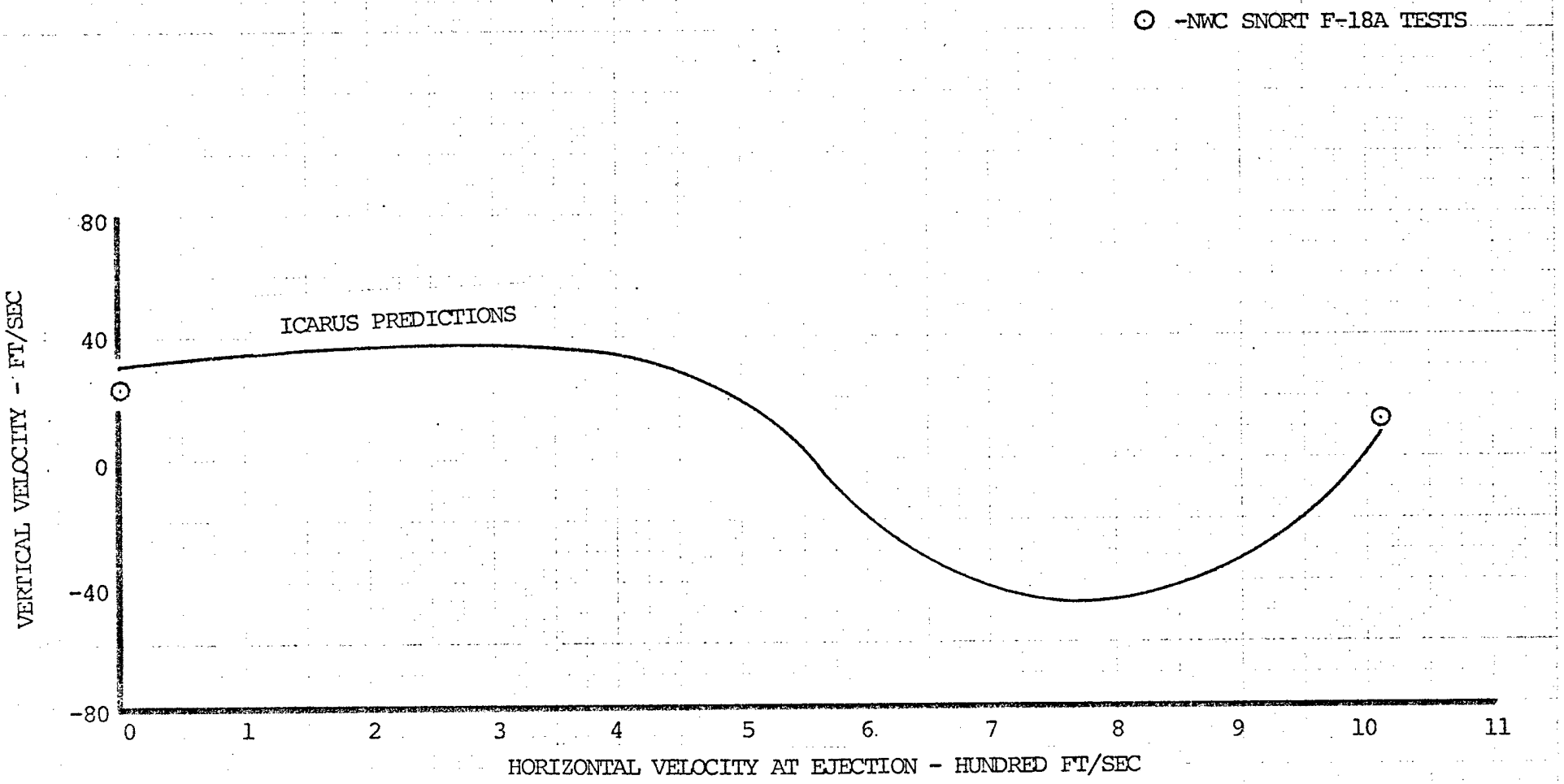


FIGURE F-62

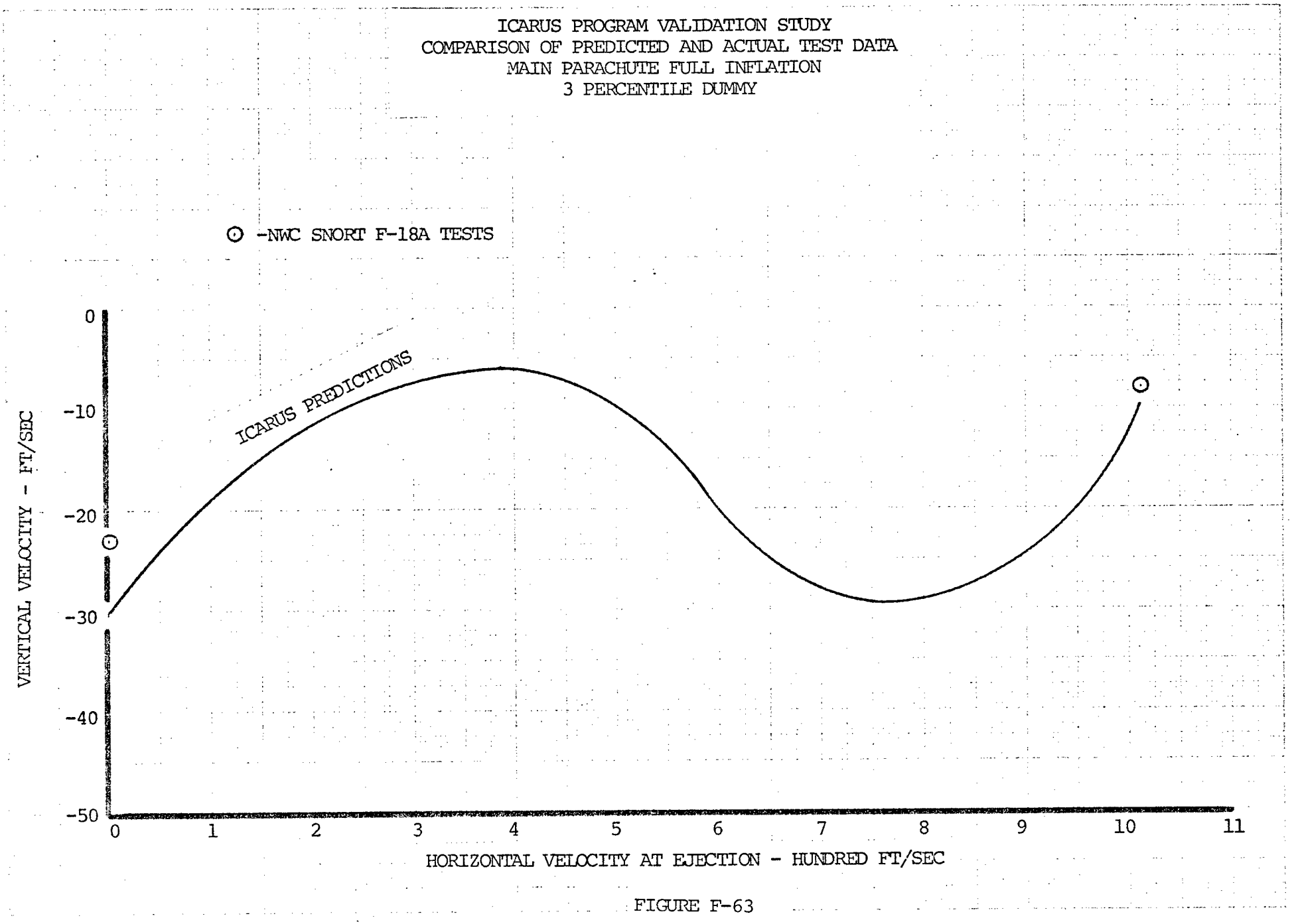

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE FULL INFLATION
3 PERCENTILE DUMMY
⊙ -NWC SNORT F-18A TESTS
ICARUS PREDICTIONS
VERTICAL VELOCITY - FT/SEC
0
-10
-20
-30
-40
-50
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-63

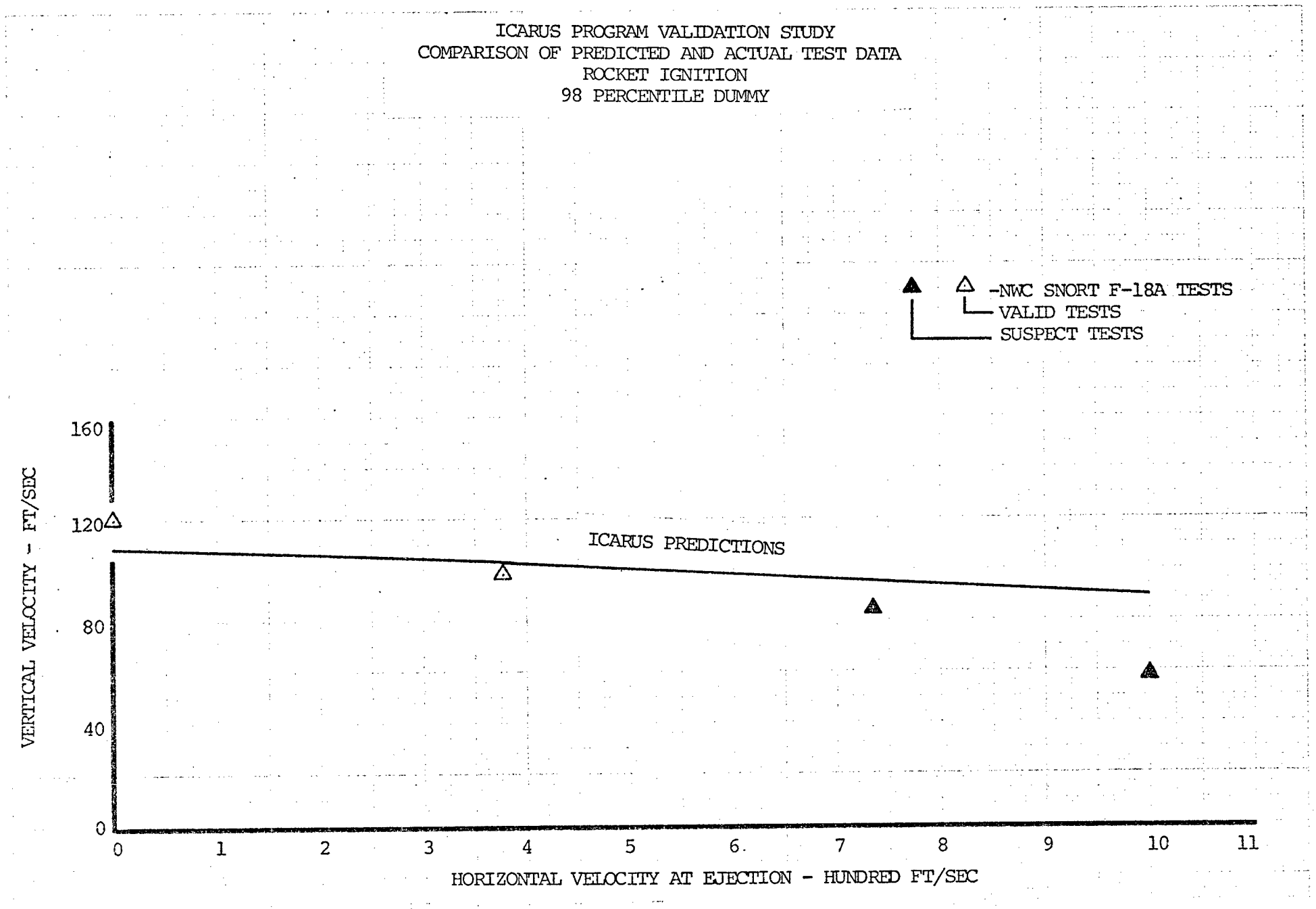

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET IGNITION
98 PERCENTILE DUMMY
-NWC SNORT F-18A TESTS
VALID TESTS
SUSPECT TESTS
ICARUS PREDICTIONS
VERTICAL VELOCITY - FT/SEC
160
120
80
40
0
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-64

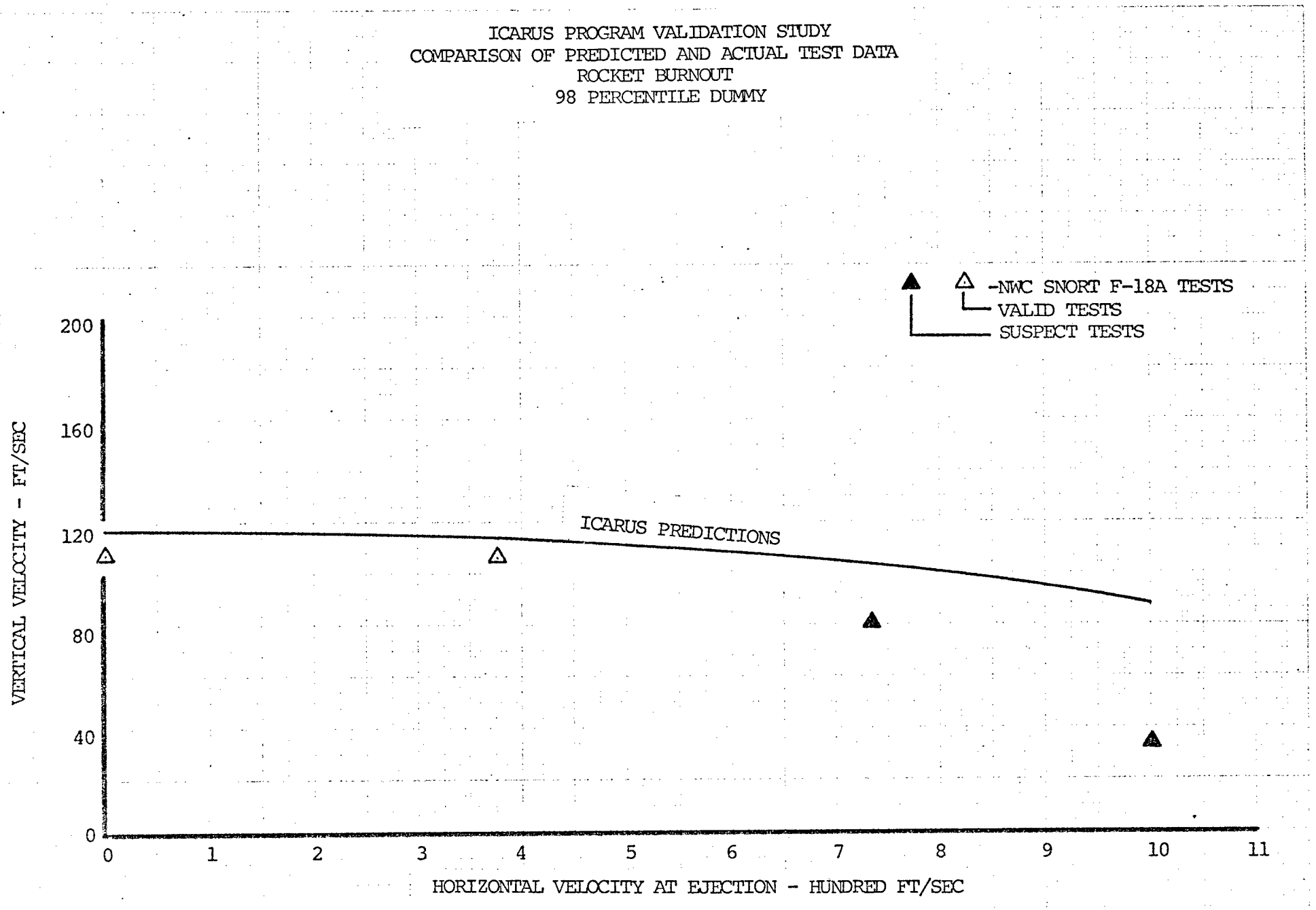

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET BURNOUT
98 PERCENTILE DUMMY
-NWC SNORT F-18A TESTS
VALID TESTS
SUSPECT TESTS
ICARUS PREDICTIONS
VERTICAL VELOCITY - FT/SEC
200
160
120
80
40
0
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-65

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE GUN FIRE
98 PERCENTILE DUMMY

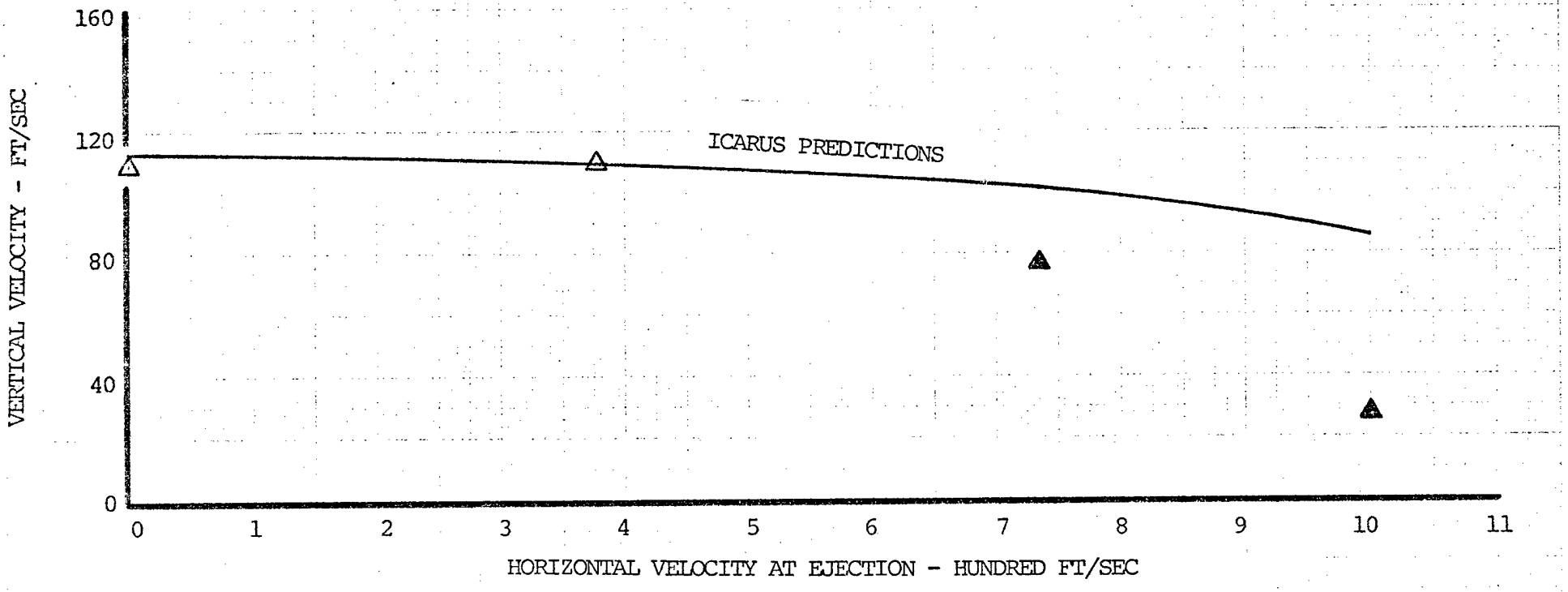


FIGURE F-66

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE PARACHUTE FULL INFLATION
98 PERCENTILE DUMMY

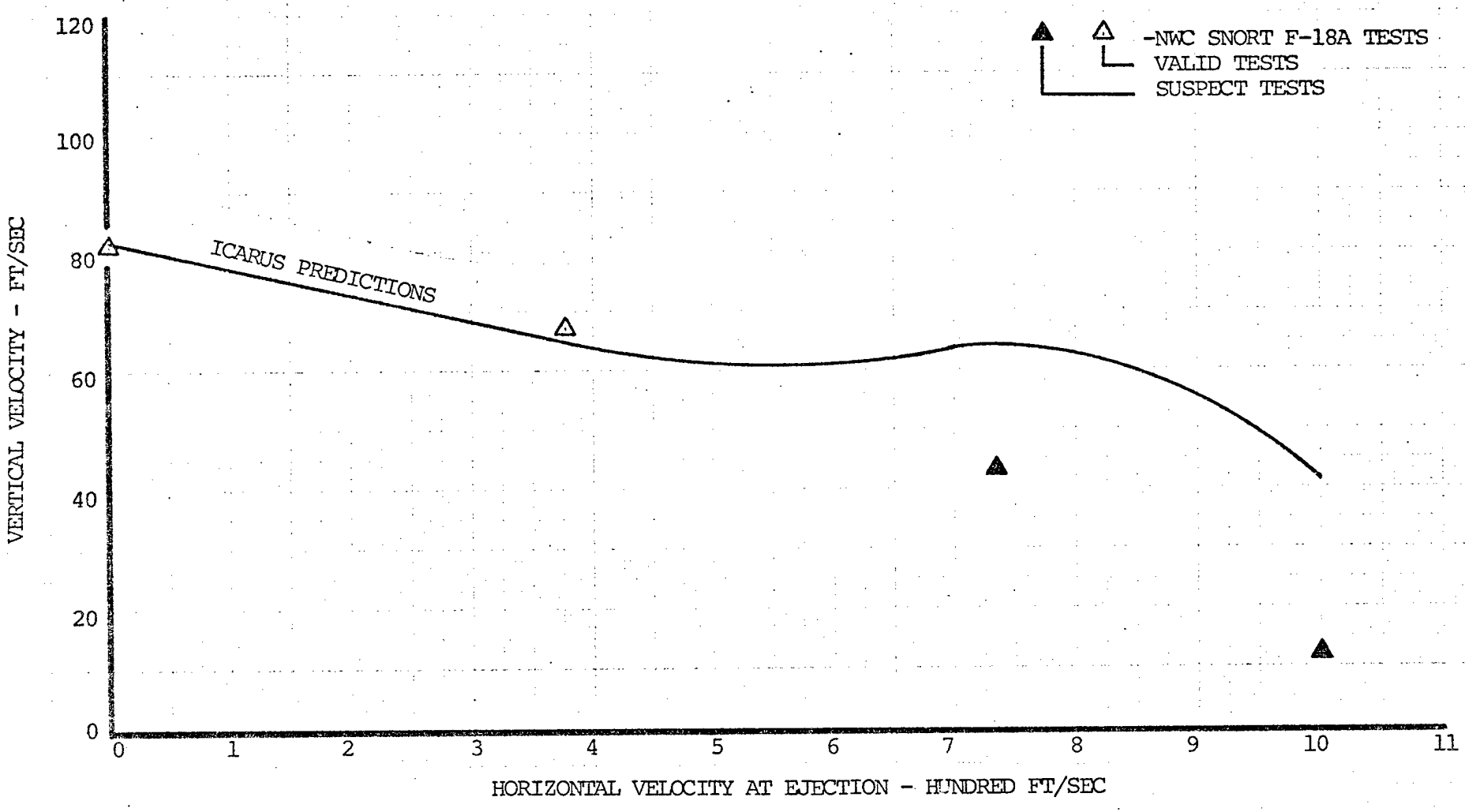


FIGURE F-67

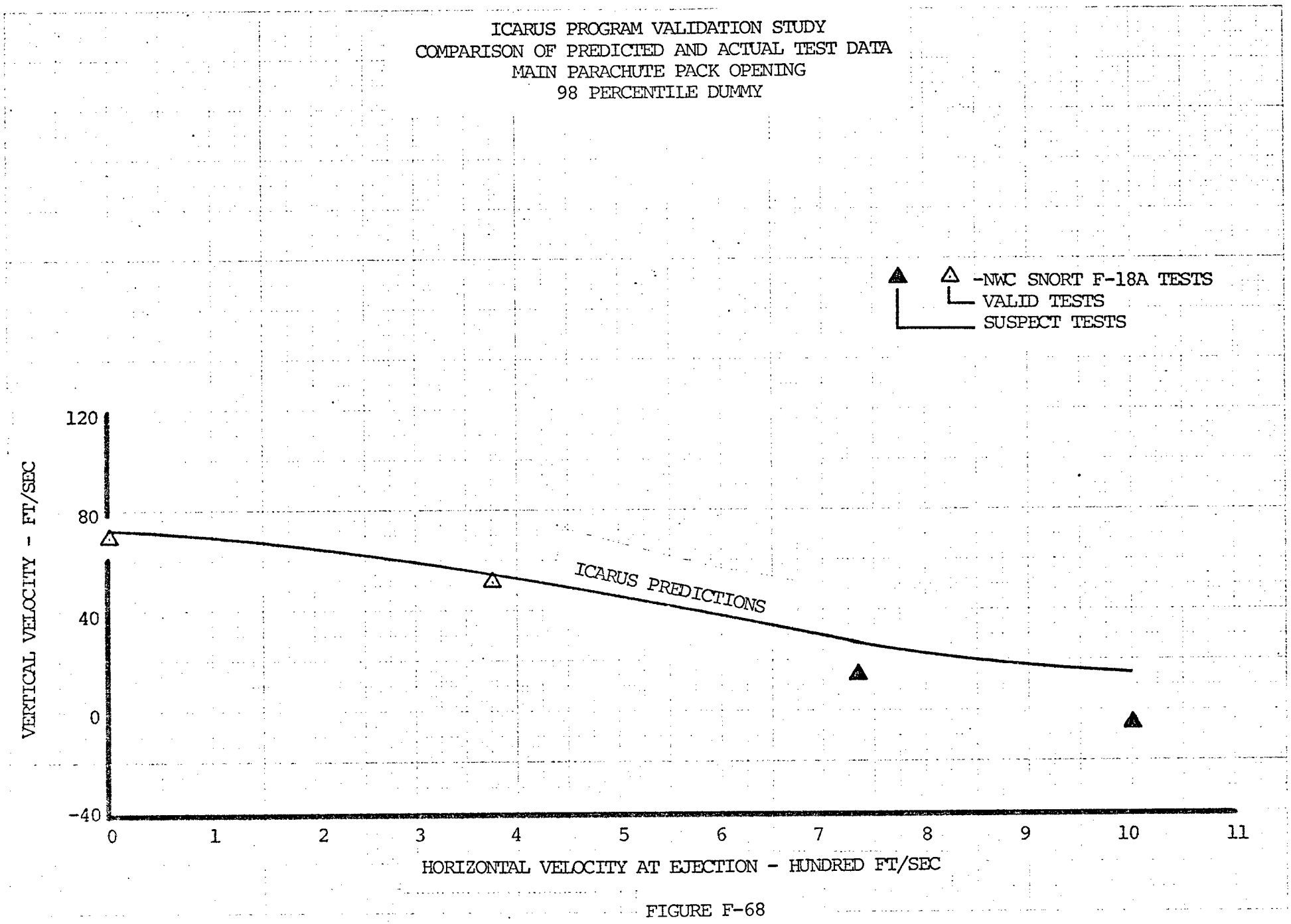

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE PACK OPENING
98 PERCENTILE DUMMY
-NWC SNORT F-18A TESTS
VALID TESTS
SUSPECT TESTS
ICARUS PREDICTIONS
VERTICAL VELOCITY - FT/SEC
120
80
40
0
-40
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-68

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE RISER LINE STRETCH
98 PERCENTILE DUMMY

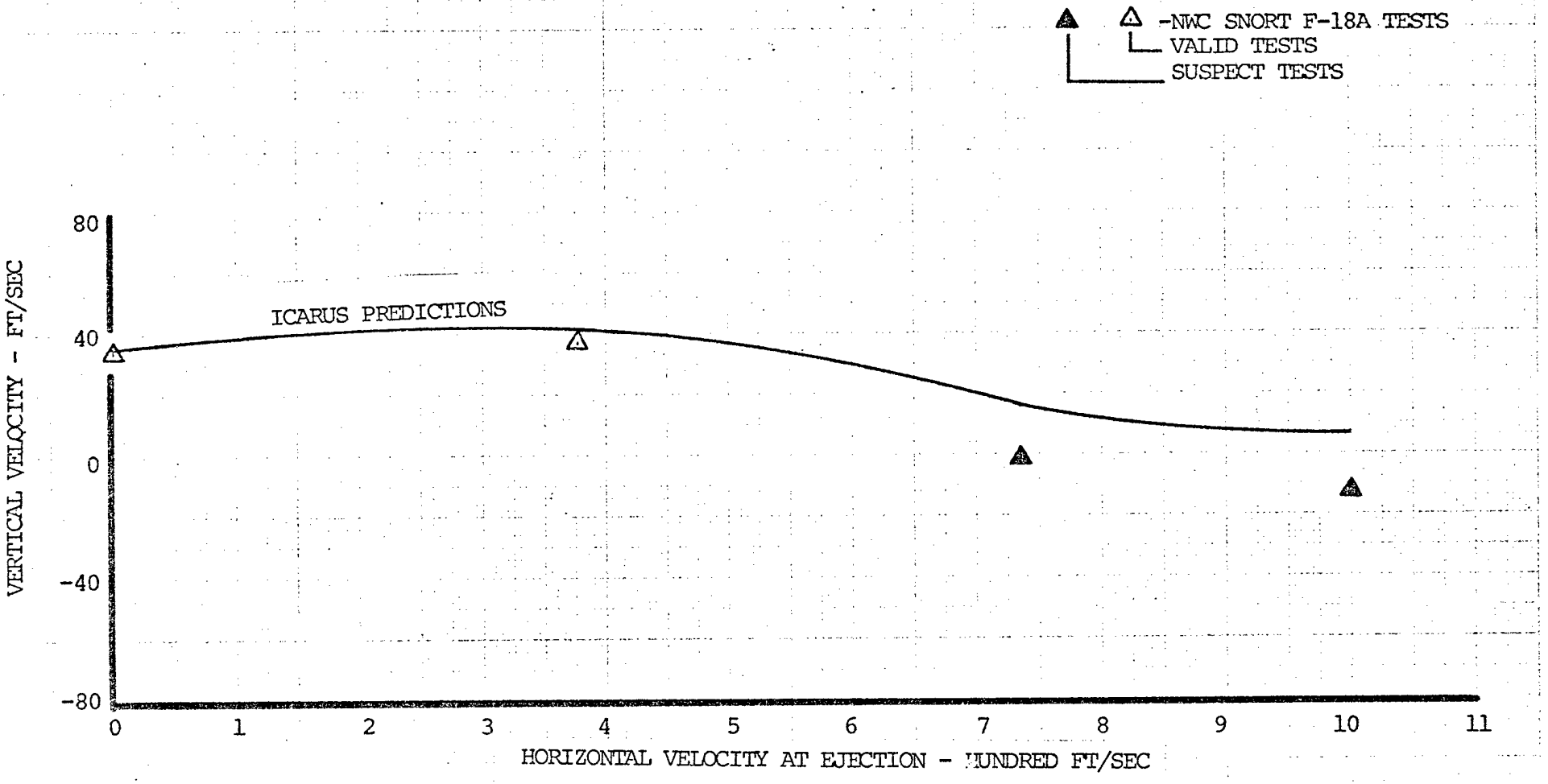


FIGURE F-69

ICARUS PROGRAM VALIDATION TESTS
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE FULL INFLATION
98 PERCENTILE DUMMY

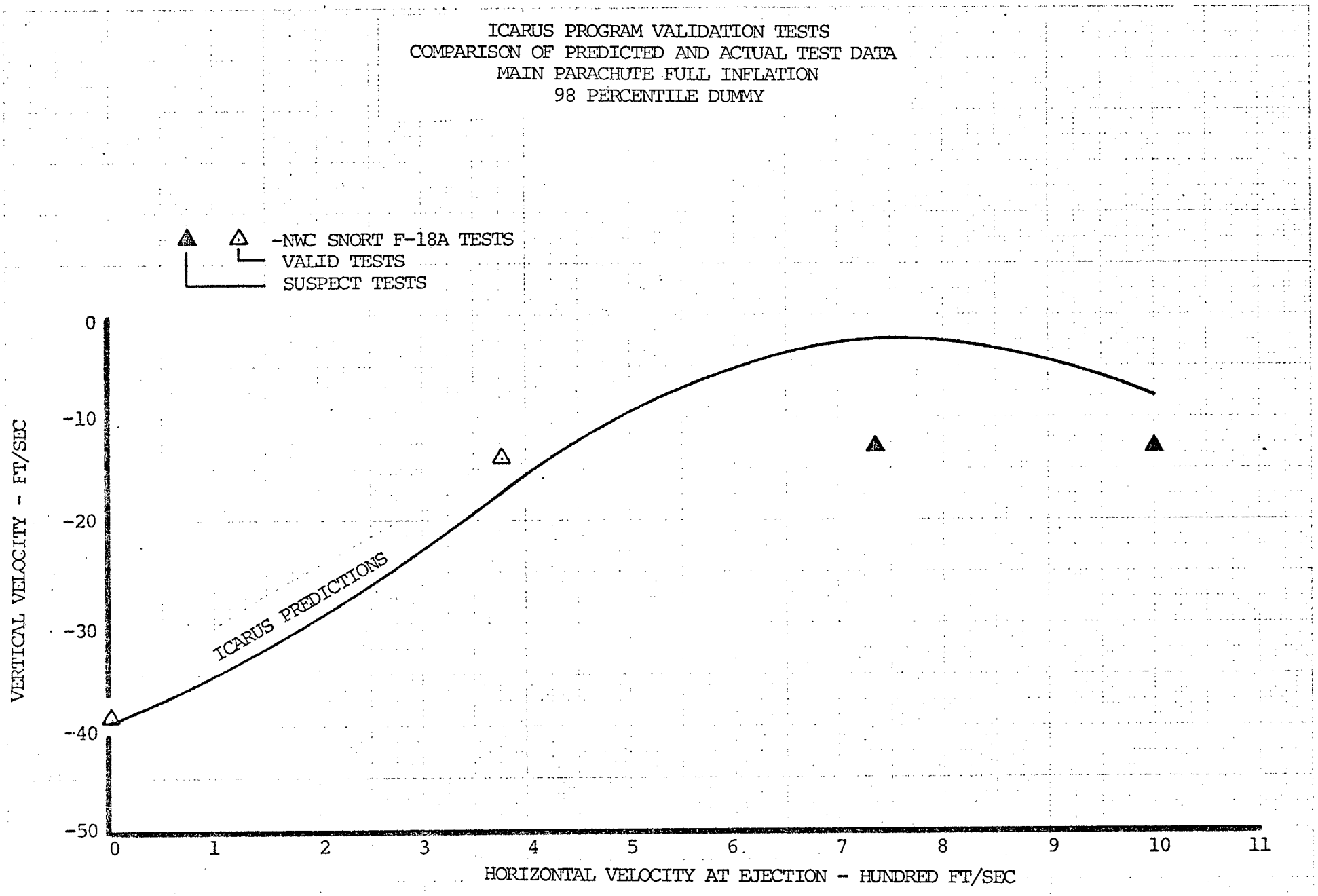


FIGURE F-70

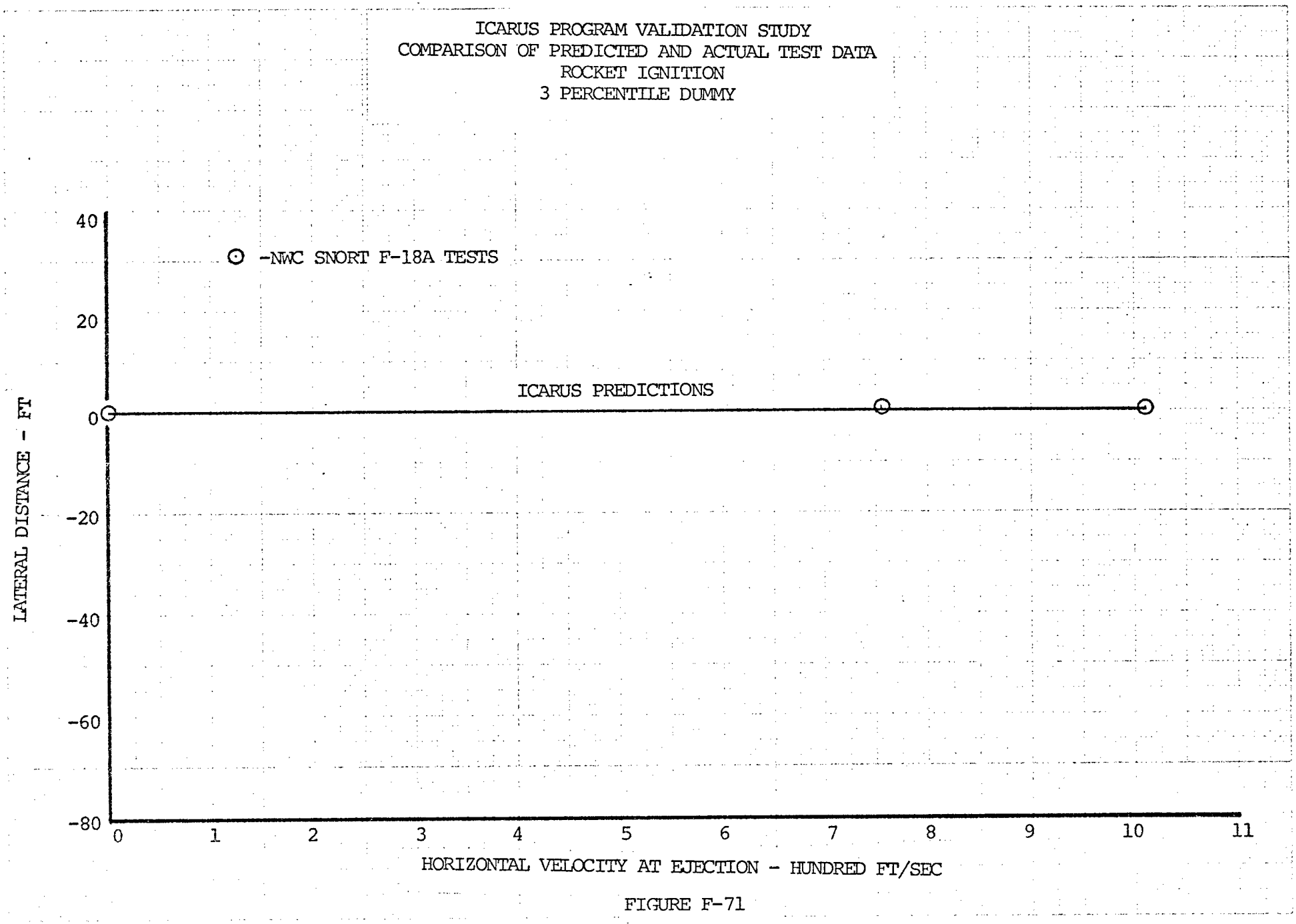

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET IGNITION
3 PERCENTILE DUMMY
-NWC SNORT F-18A TESTS
ICARUS PREDICTIONS
LATERAL DISTANCE - FT
40
20
0
-20
-40
-60
-80
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-71

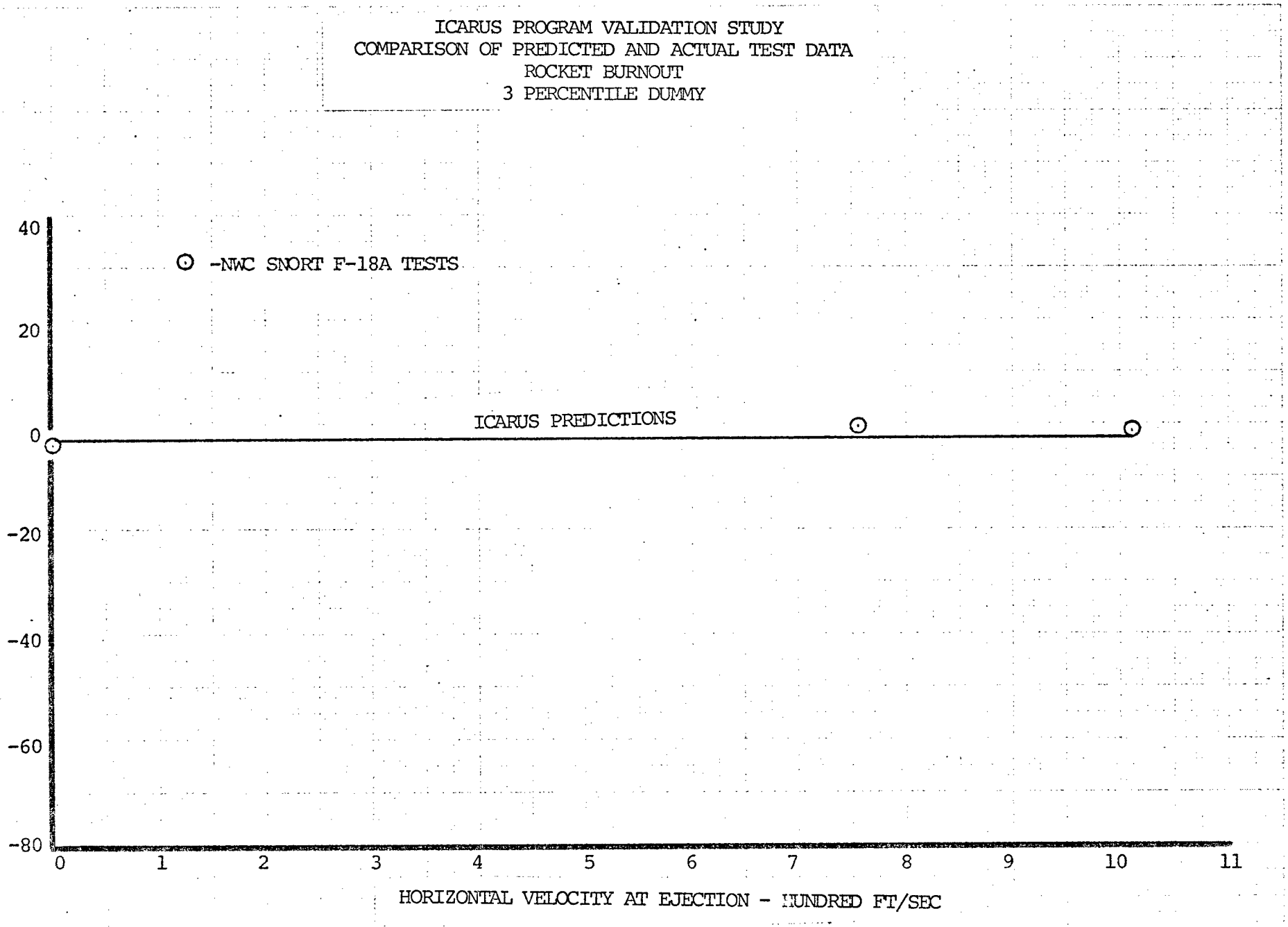

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET BURNOUT
3 PERCENTILE DUMMY
⊙ -NWC SNORT F-18A TESTS
ICARUS PREDICTIONS
LATERAL DISTANCE - FT
40
20
0
-20
-40
-60
-80
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-72

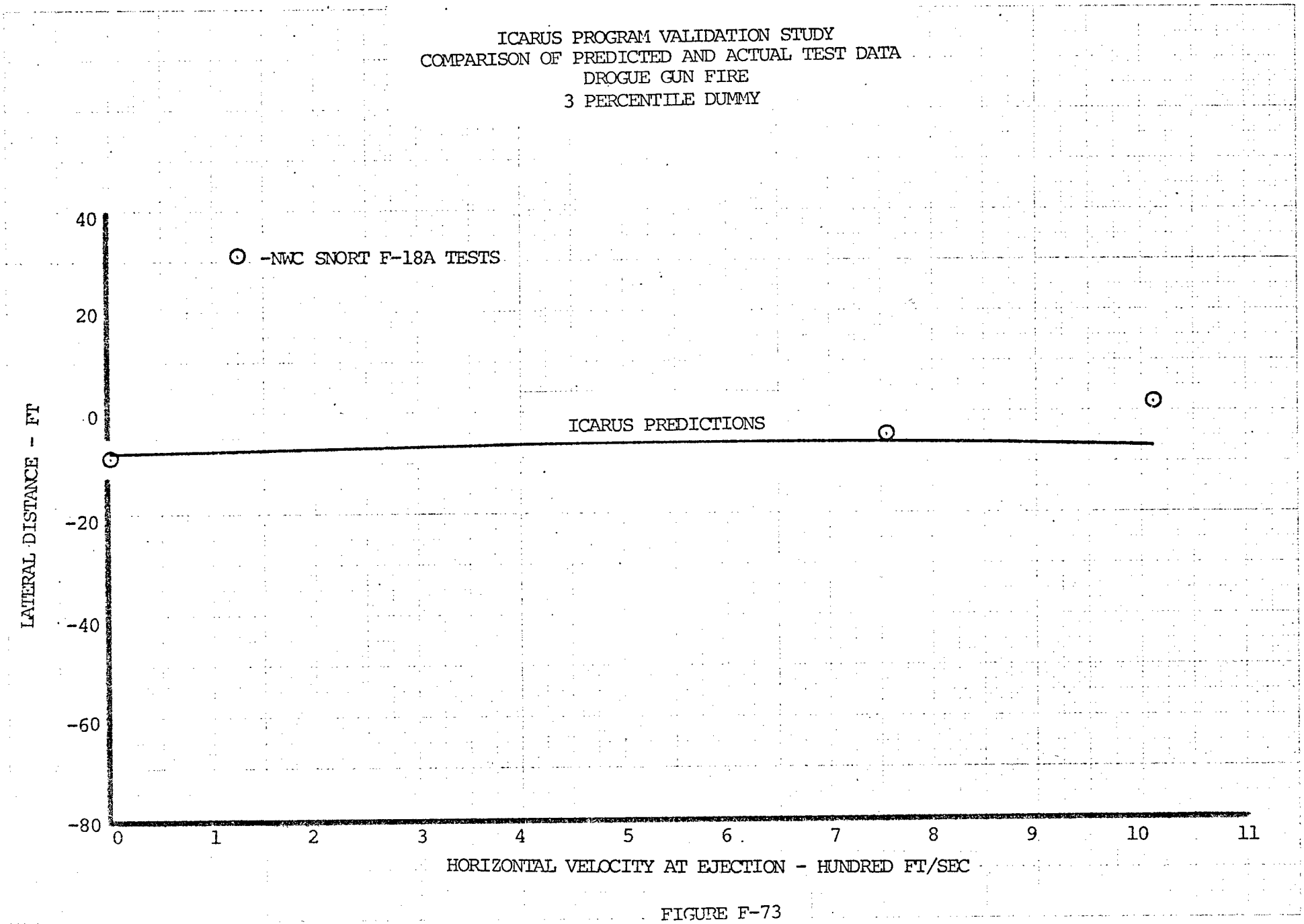

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE GUN FIRE
3 PERCENTILE DUMMY
⊙ -NWC SNORT F-18A TESTS
ICARUS PREDICTIONS
LATERAL DISTANCE - FT
40
20
0
-20
-40
-60
-80
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-73

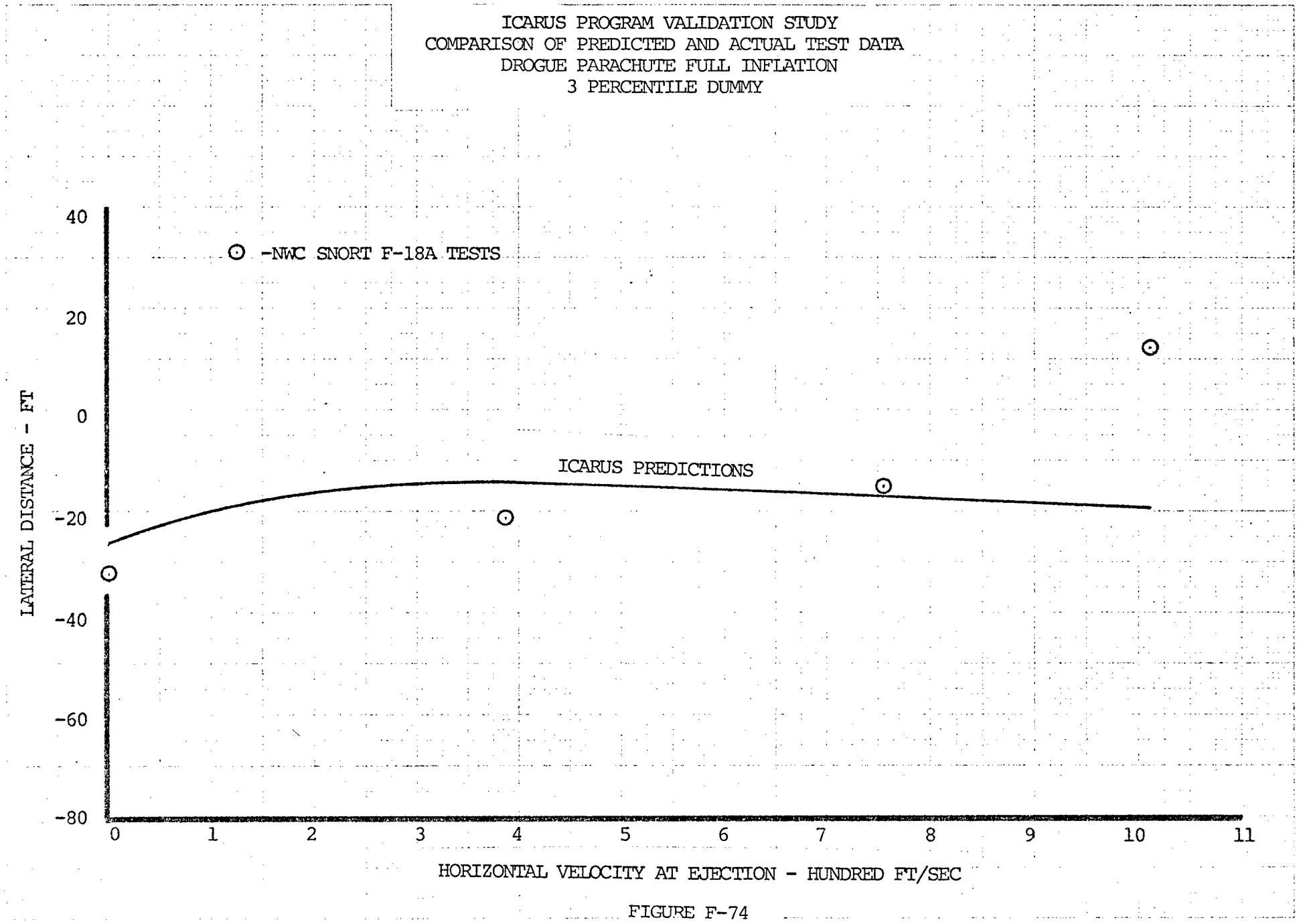

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE PARACHUTE FULL INFLATION
3 PERCENTILE DUMMY
-NWC SNORT F-18A TESTS
ICARUS PREDICTIONS
LATERAL DISTANCE - FT
40
20
0
-20
-40
-60
-80
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-74

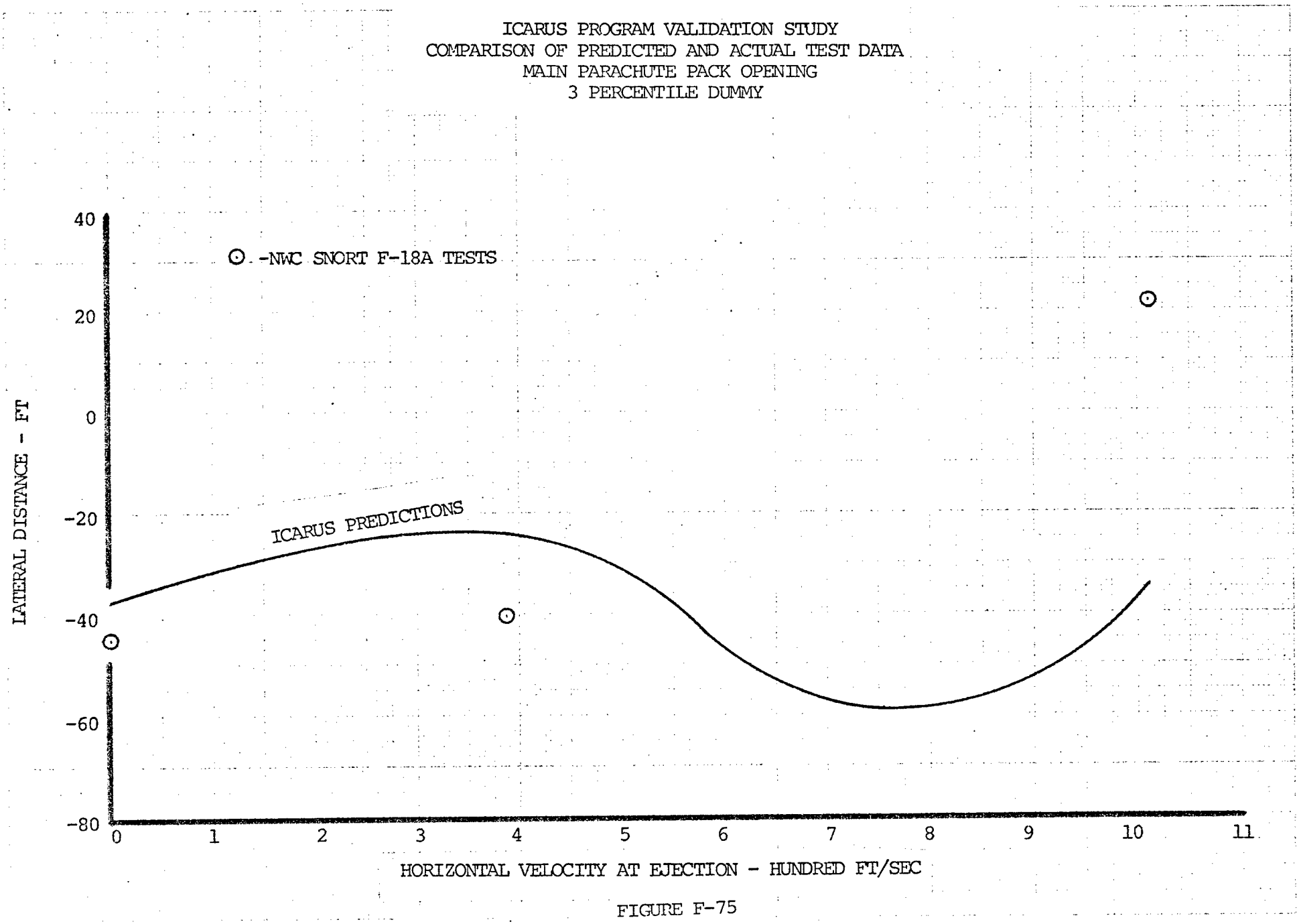

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE PACK OPENING
3 PERCENTILE DUMMY
⊙ -NWC SNORT F-18A TESTS
ICARUS PREDICTIONS
LATERAL DISTANCE - FT
40
20
0
-20
-40
-60
-80
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-75

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE RISER LINE STRETCH
3 PERCENTILE DUMMY

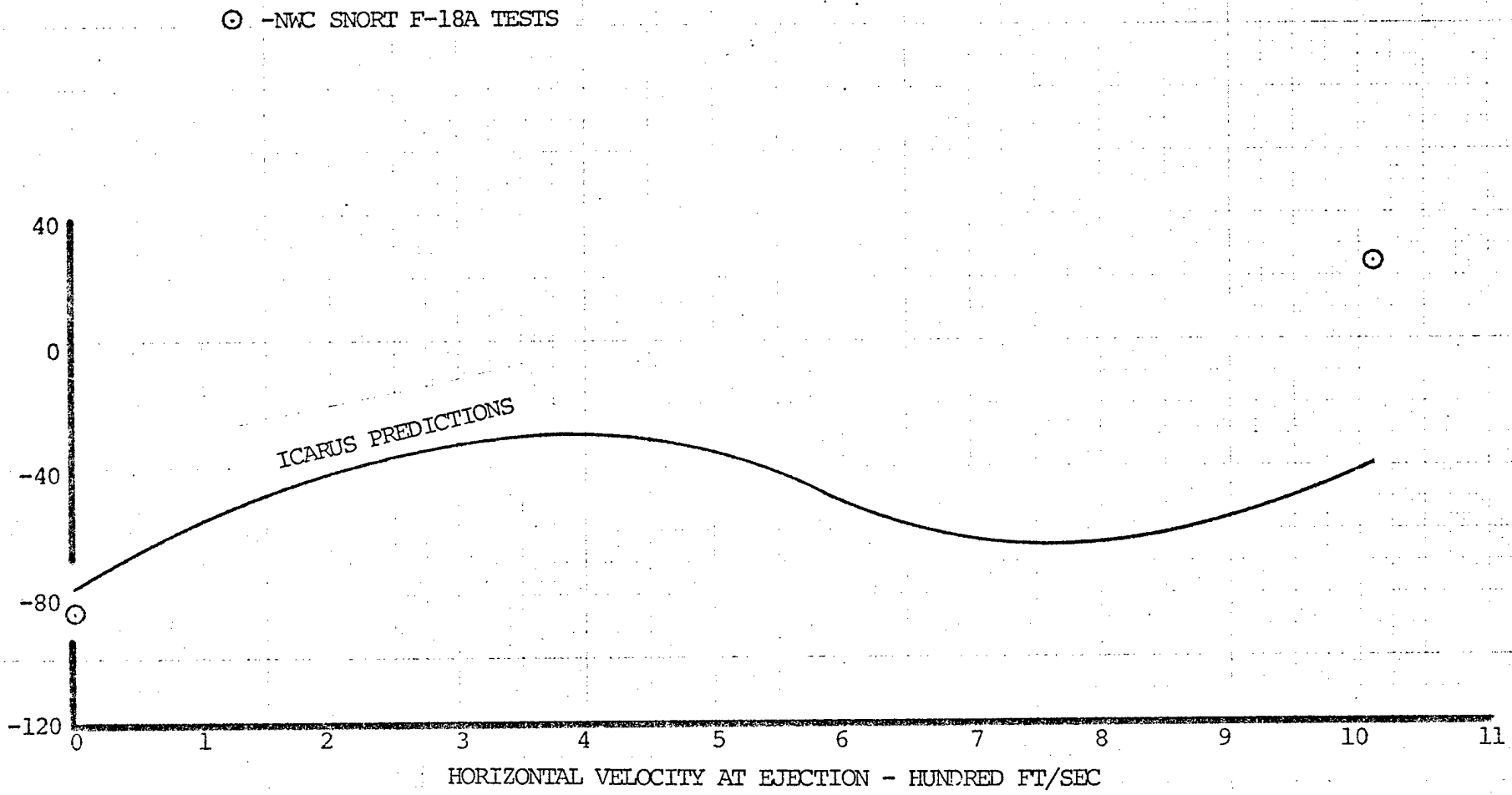


FIGURE F-76

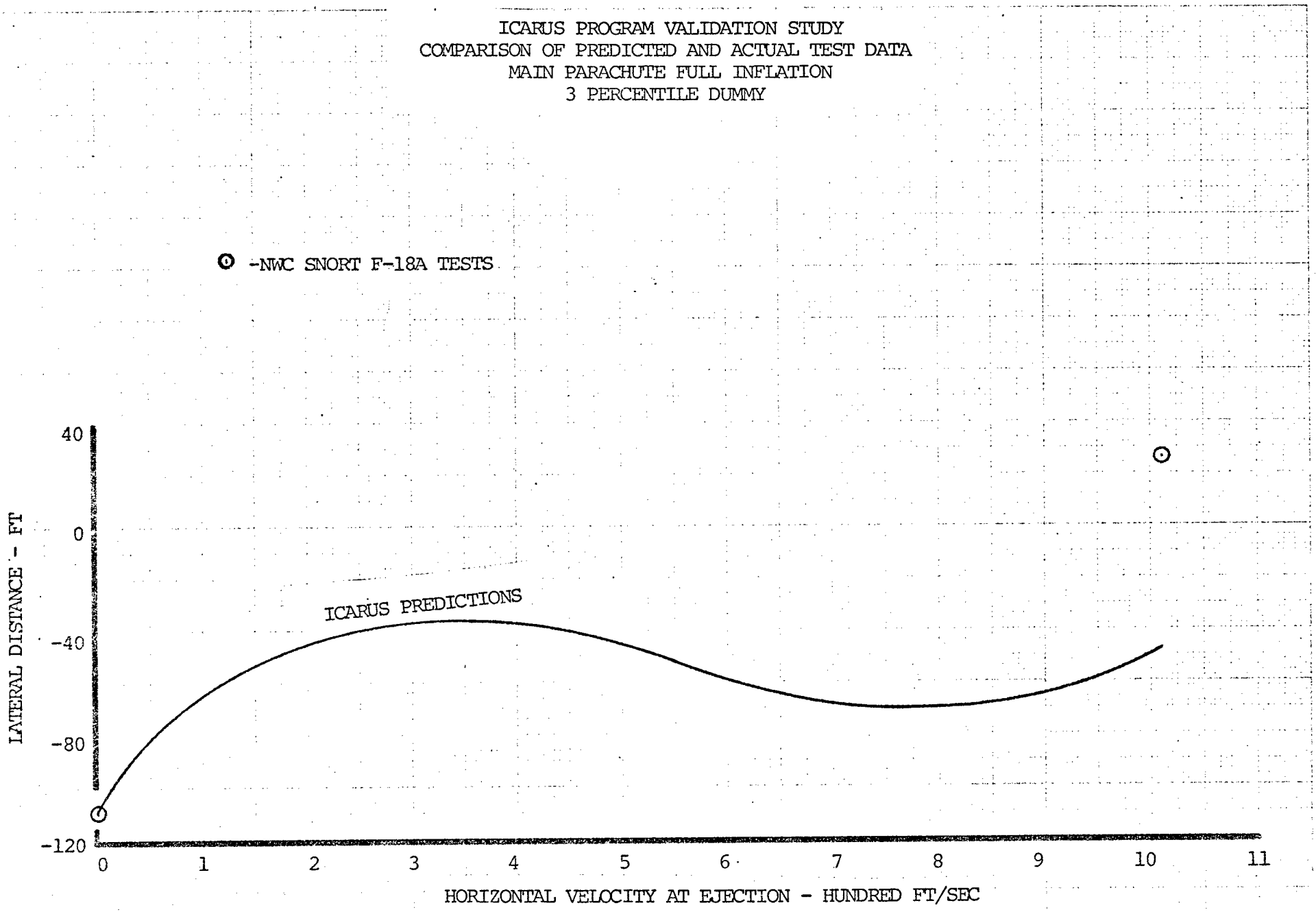

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE FULL INFLATION
3 PERCENTILE DUMMY
-NWC SNORT F-18A TESTS
ICARUS PREDICTIONS
LATERAL DISTANCE - FT
40
0
-40
-80
-120
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-77

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET IGNITION
98 PERCENTILE DUMMY

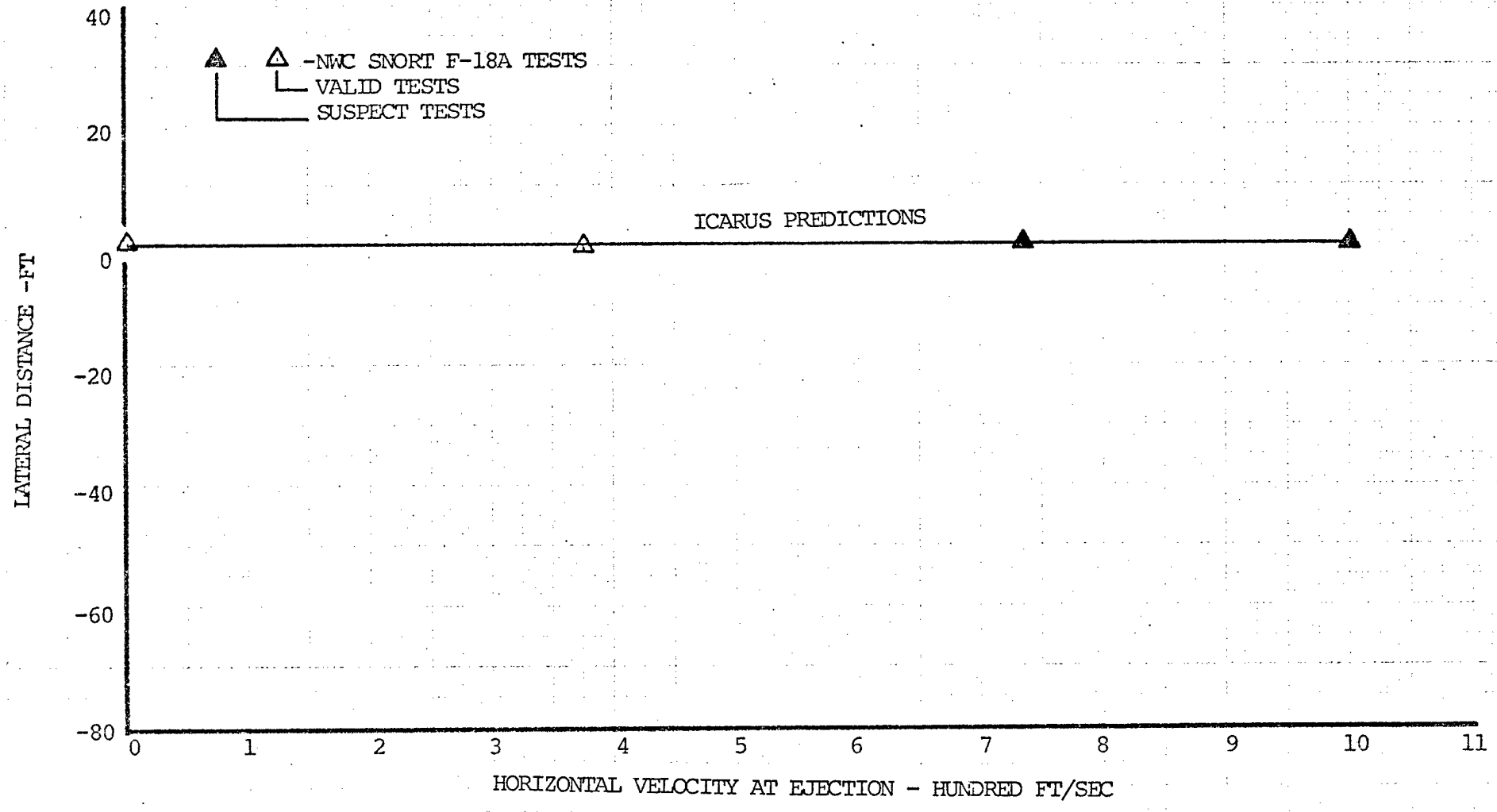


FIGURE F-78

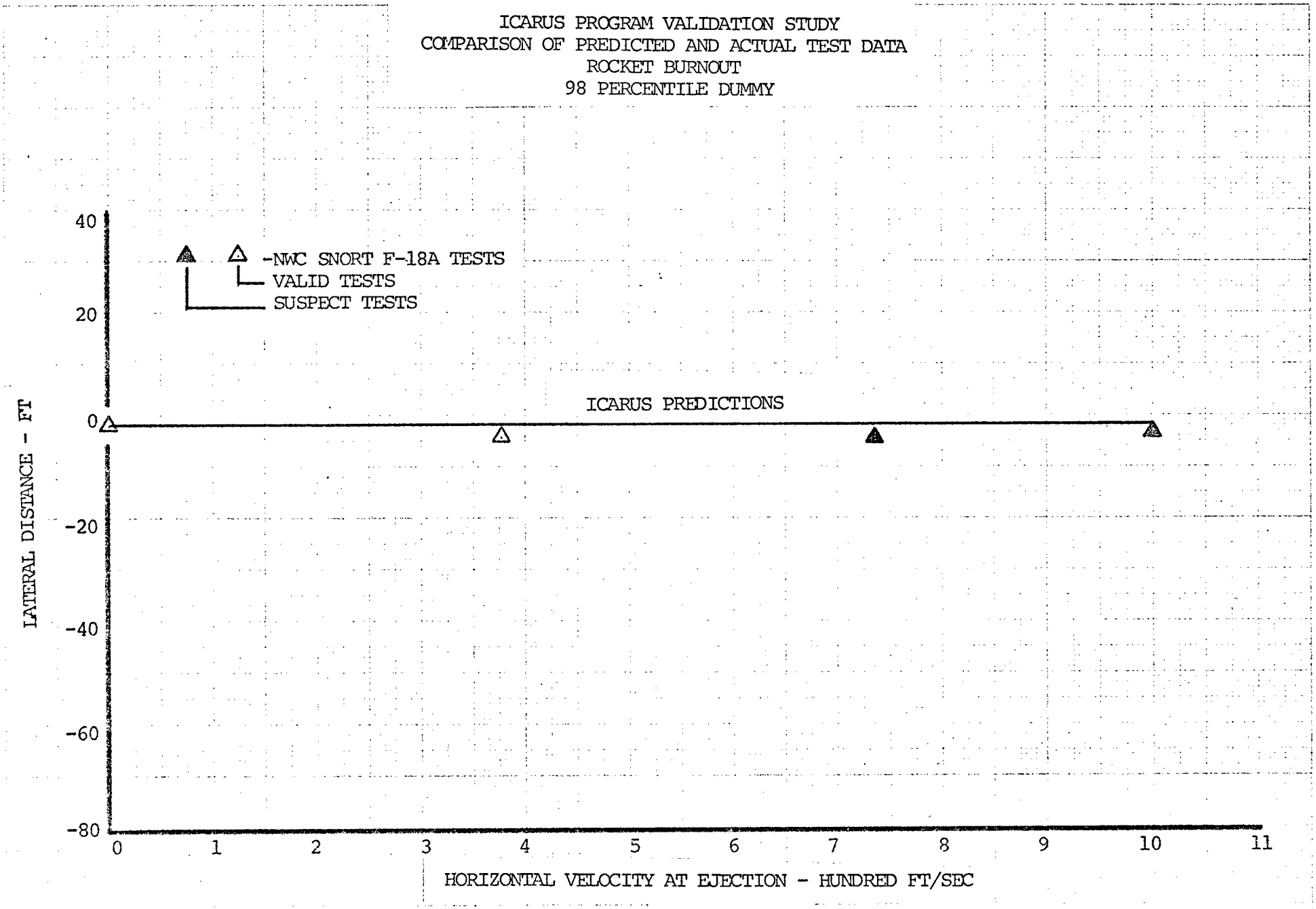

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET BURNOUT
98 PERCENTILE DUMMY
-NWC SNORT F-18A TESTS
VALID TESTS
SUSPECT TESTS
ICARUS PREDICTIONS
LATERAL DISTANCE - FT
40
20
0
-20
-40
-60
-80
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-79

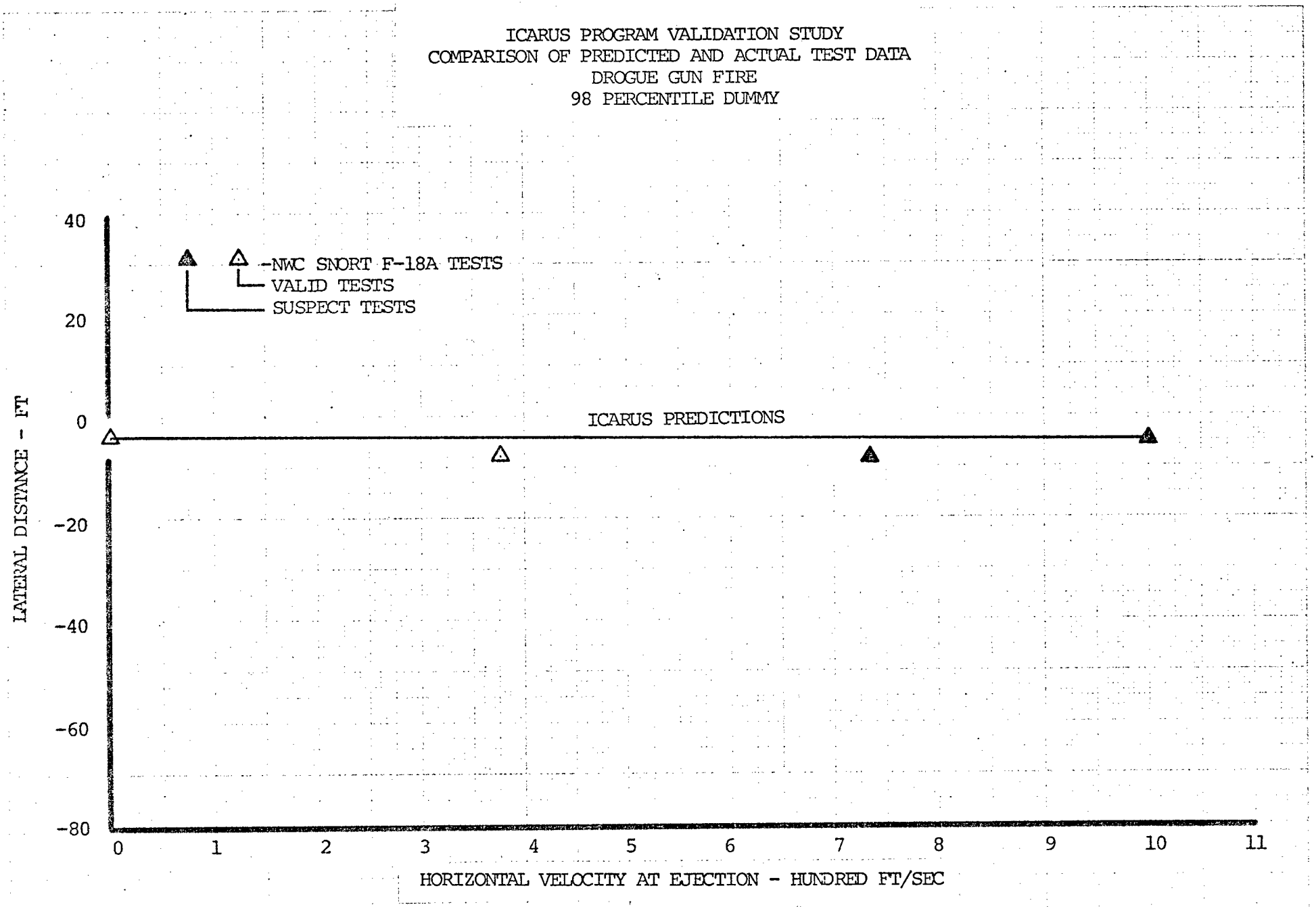

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE GUN FIRE
98 PERCENTILE DUMMY
-NWC SNORT F-18A TESTS
VALID TESTS
SUSPECT TESTS
ICARUS PREDICTIONS
LATERAL DISTANCE - FT
40
20
0
-20
-40
-60
-80
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-80

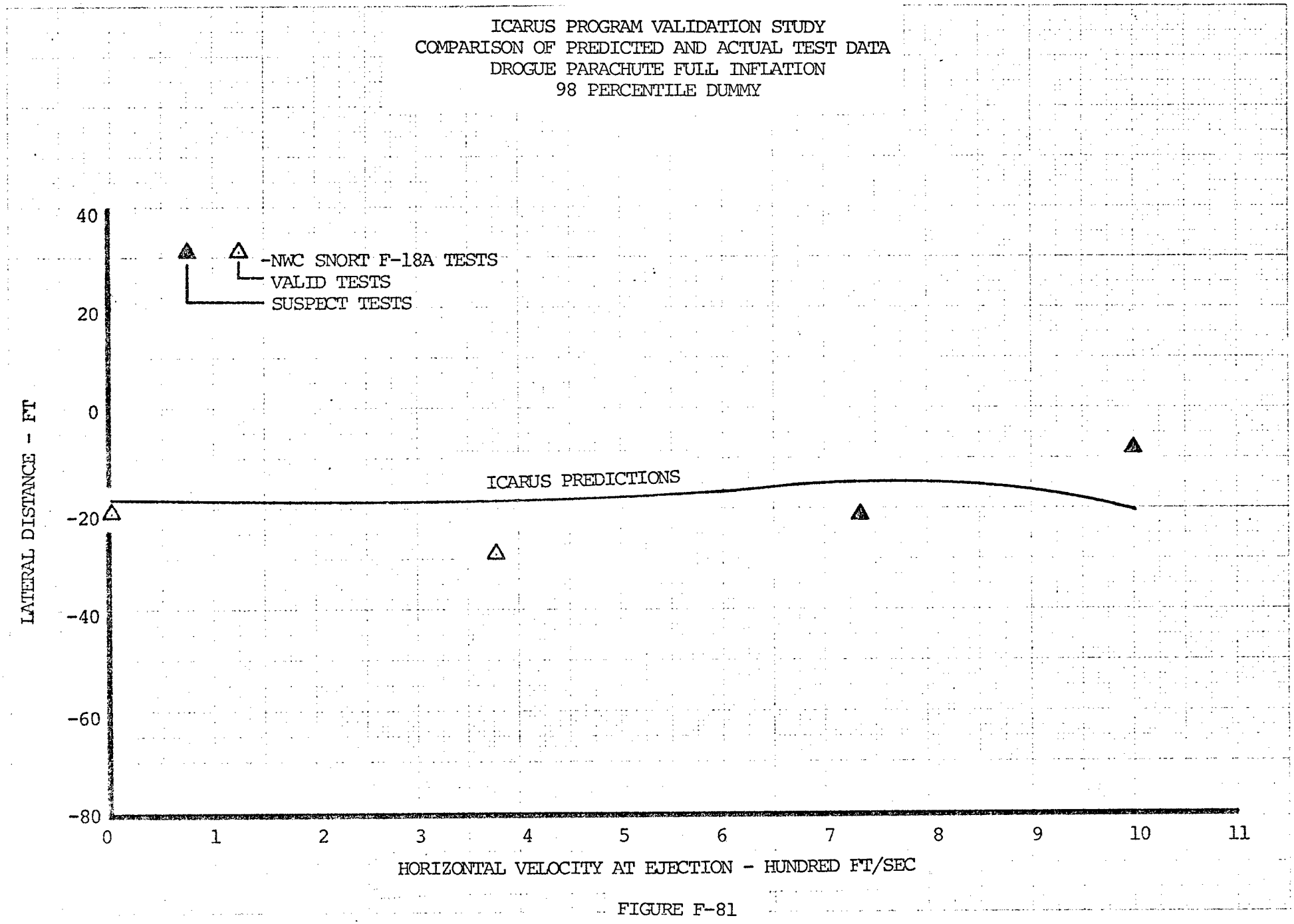

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE PARACHUTE FULL INFLATION
98 PERCENTILE DUMMY
-NWC SNORT F-18A TESTS
VALID TESTS
SUSPECT TESTS
ICARUS PREDICTIONS
LATERAL DISTANCE - FT
40
20
0
-20
-40
-60
-80
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-81

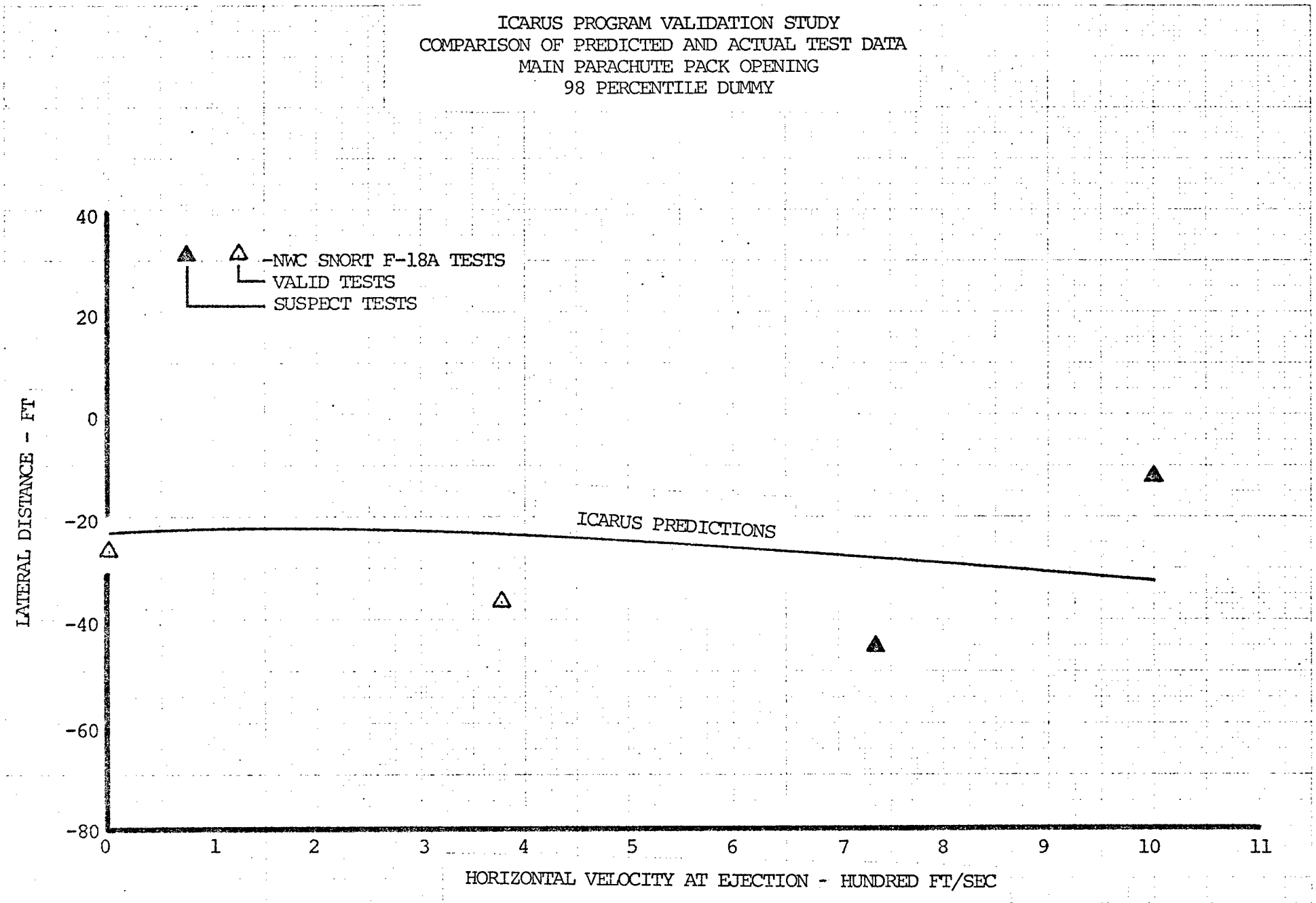

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE PACK OPENING
98 PERCENTILE DUMMY
-NWC SNORT F-18A TESTS
VALID TESTS
SUSPECT TESTS
ICARUS PREDICTIONS
LATERAL DISTANCE - FT
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC
40
20
0
-20
-40
-60
-80
0
1
2
3
4
5
6
7
8
9
10
11

FIGURE F-82

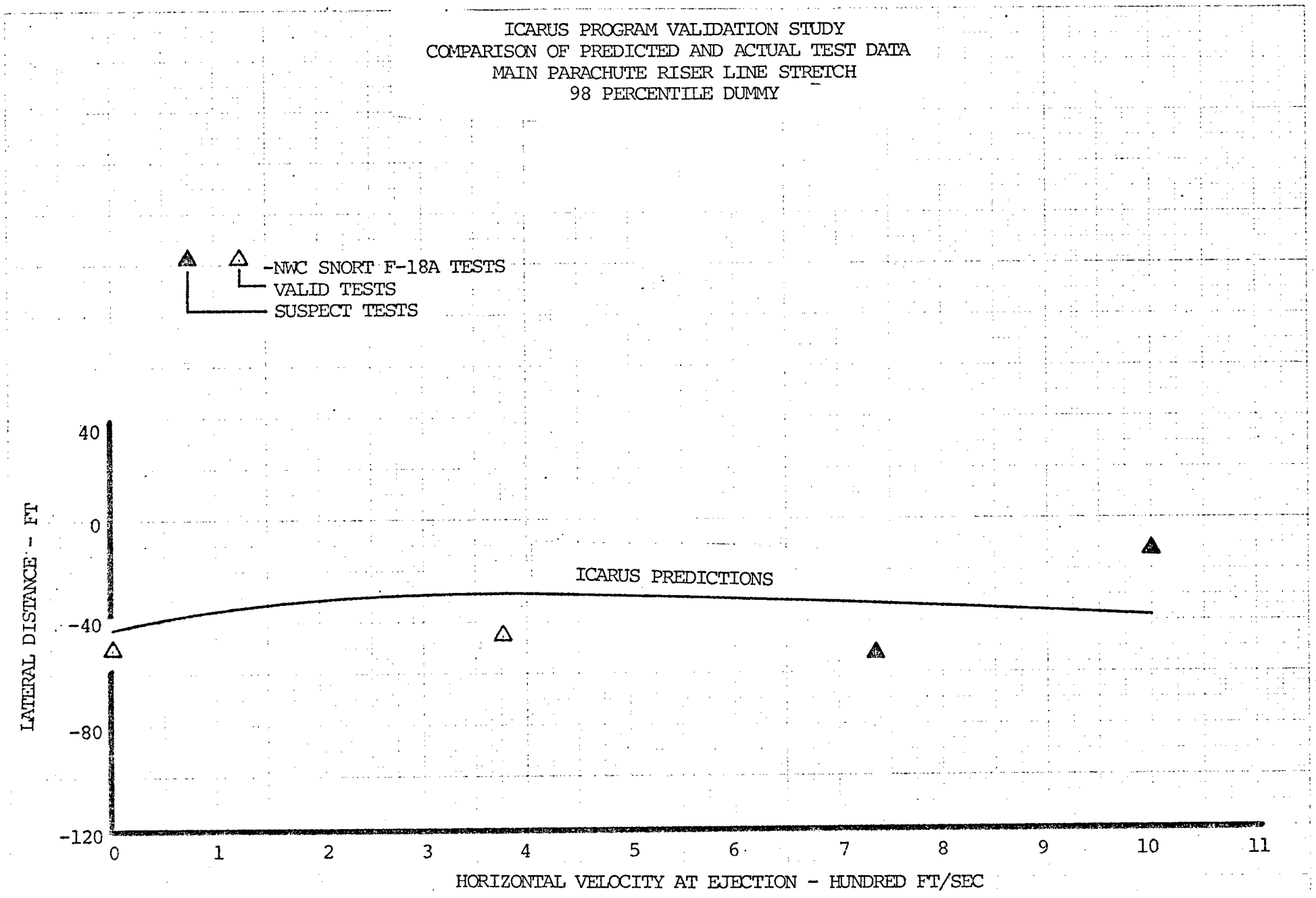

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE RISER LINE STRETCH
98 PERCENTILE DUMMY
-NWC SNORT F-18A TESTS
VALID TESTS
SUSPECT TESTS
ICARUS PREDICTIONS
LATERAL DISTANCE - FT
40
0
-40
-80
-120
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-83

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE FULL INFLATION
98 PERCENTILE DUMMY

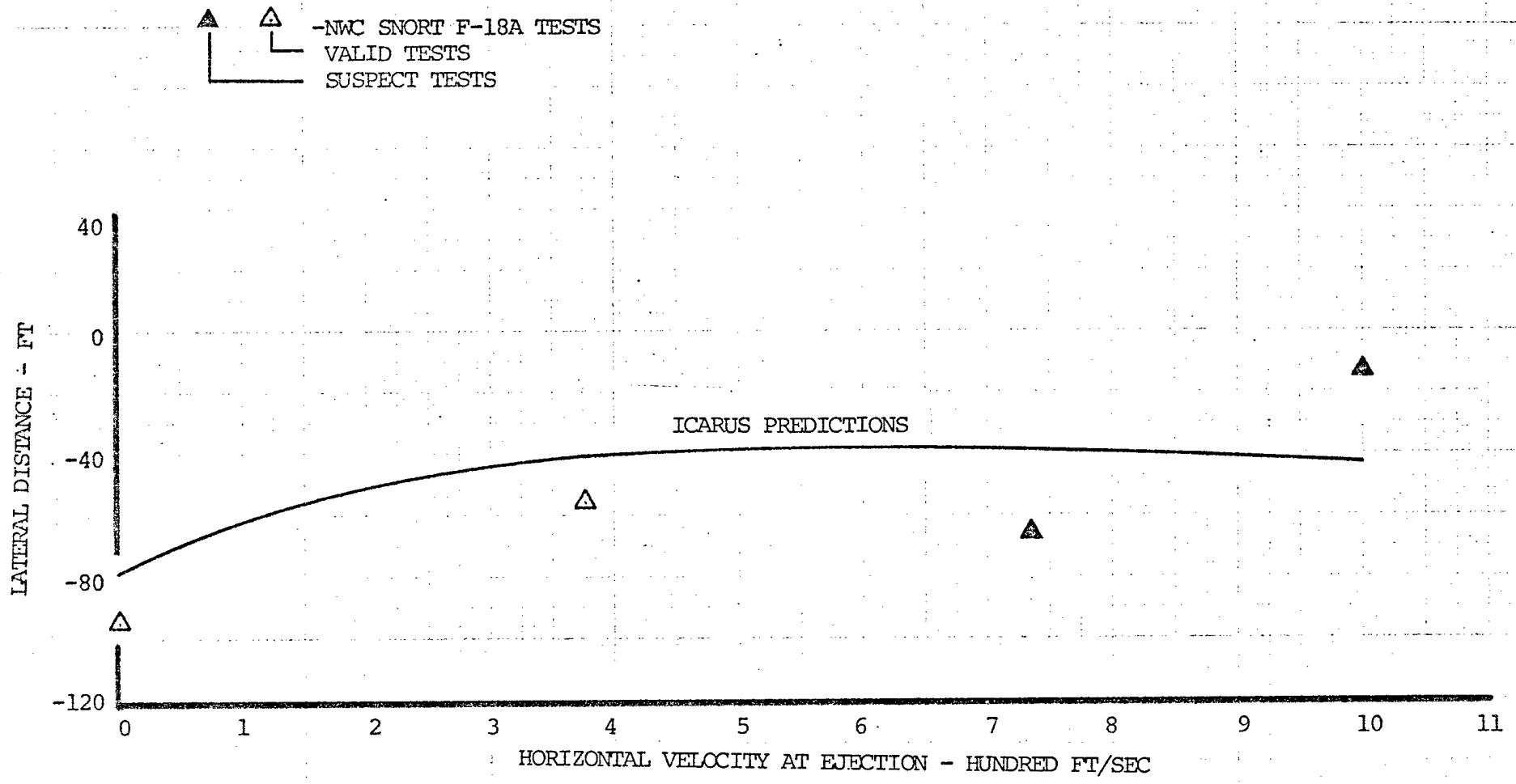


FIGURE F-84

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET IGNITION
3 PERCENTILE DUMMY

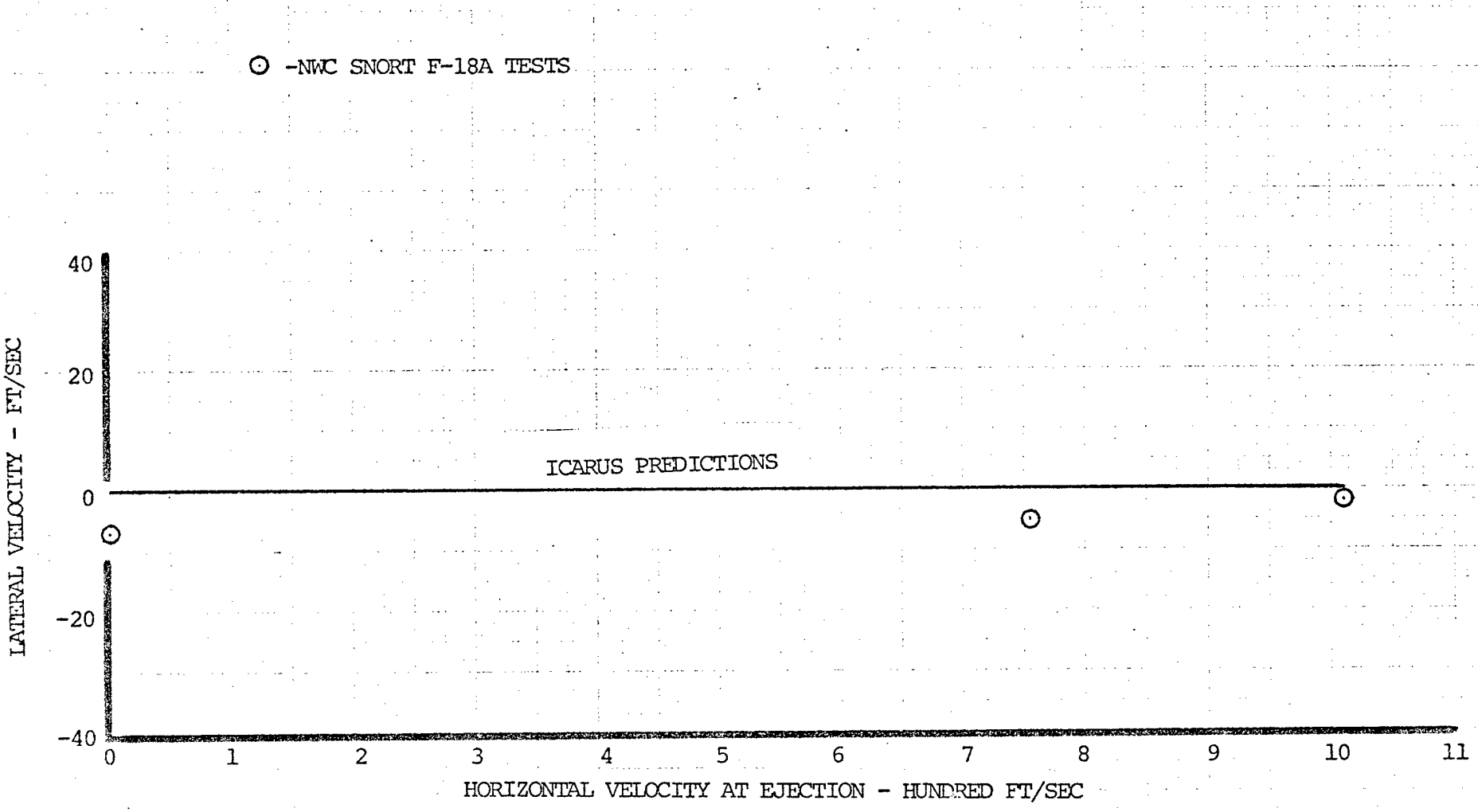


FIGURE F-85

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET BURNOUT
3 PERCENTILE DUMMY

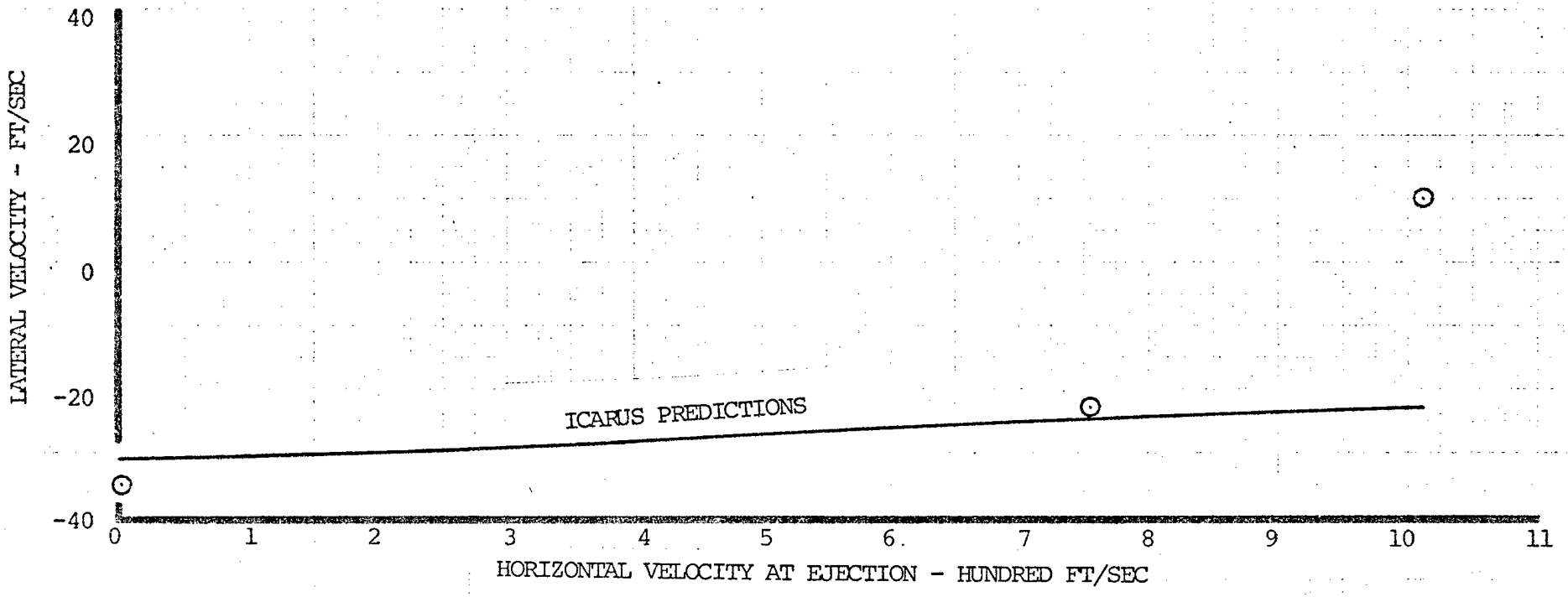


FIGURE F-86

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE GUN FIRE
3 PERCENTILE DUMMY

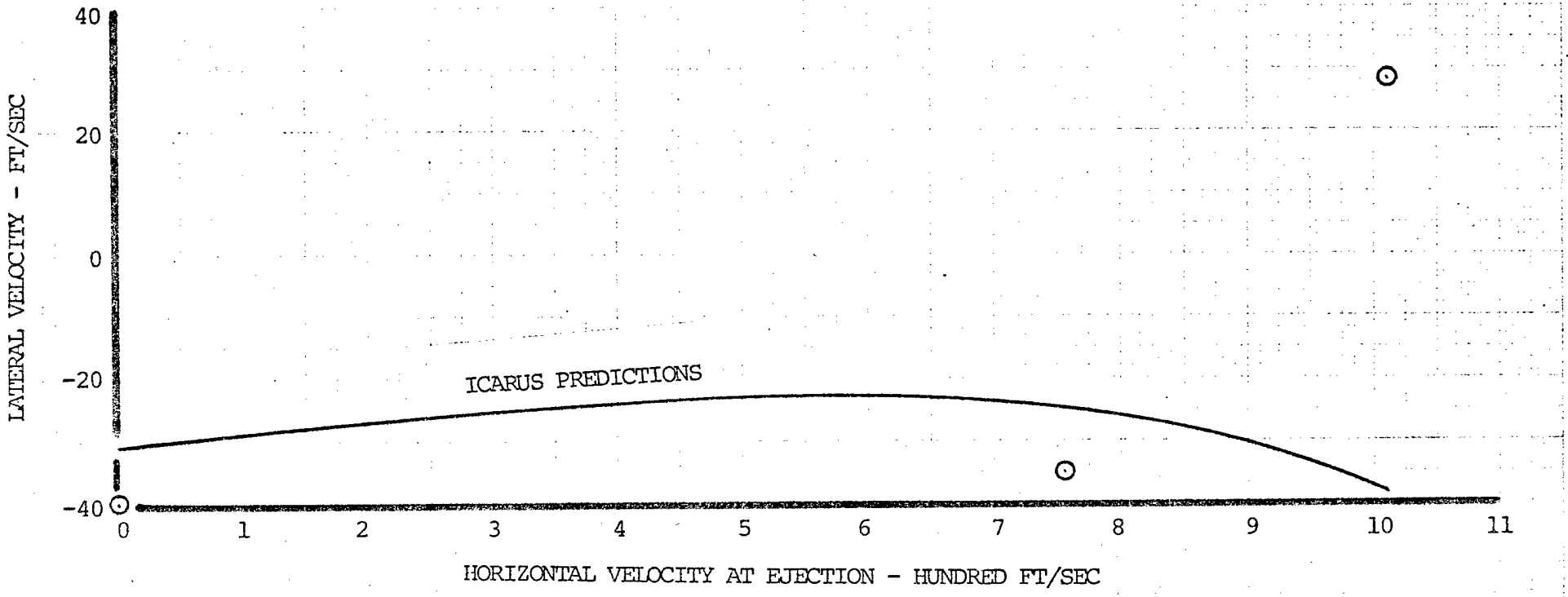


FIGURE F-87

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE PARACHUTE FULL INFLATION
3 PERCENTILE DUMMY

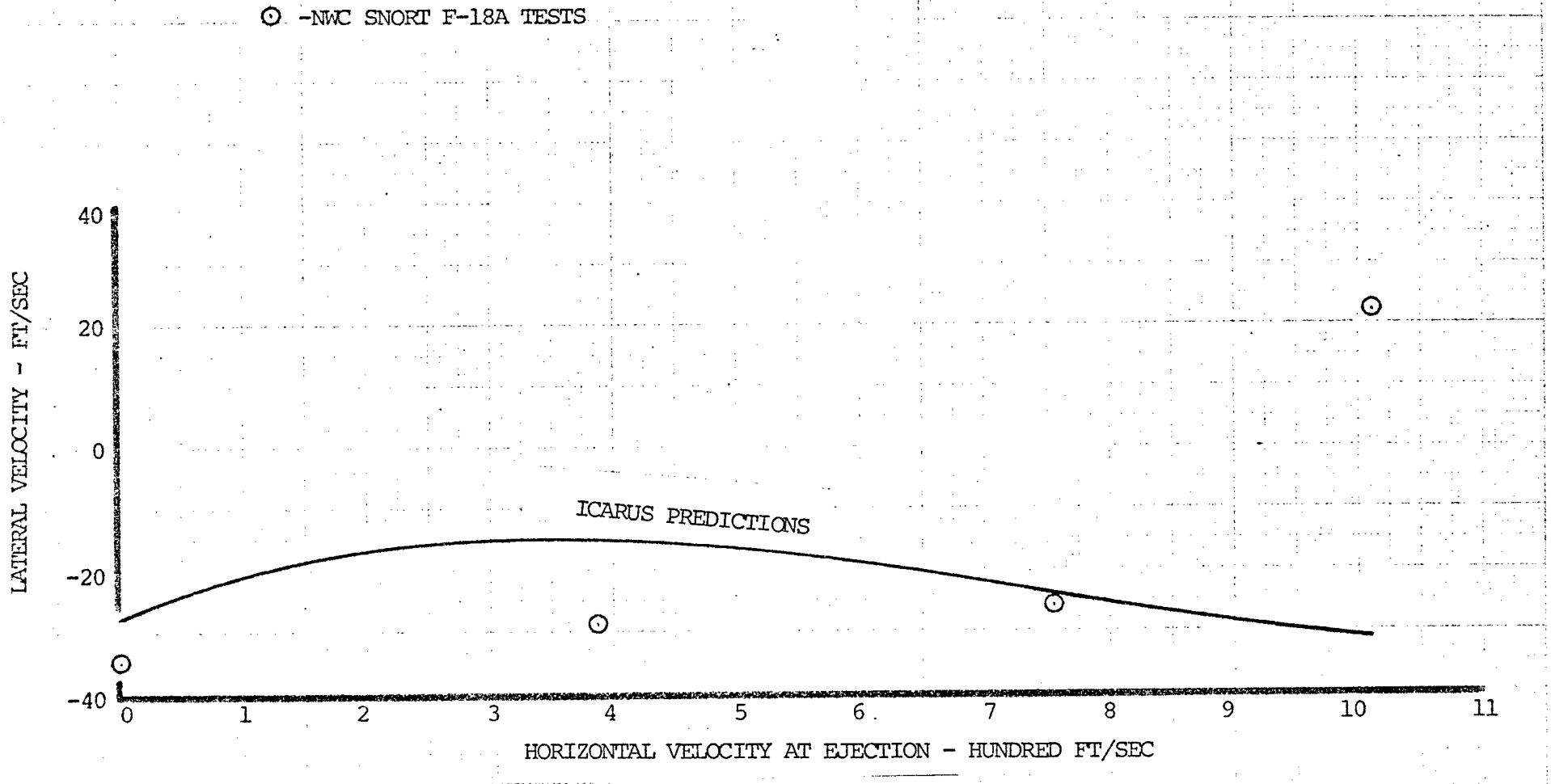


FIGURE F-88

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE PACK OPENING
3 PERCENTILE DUMMY

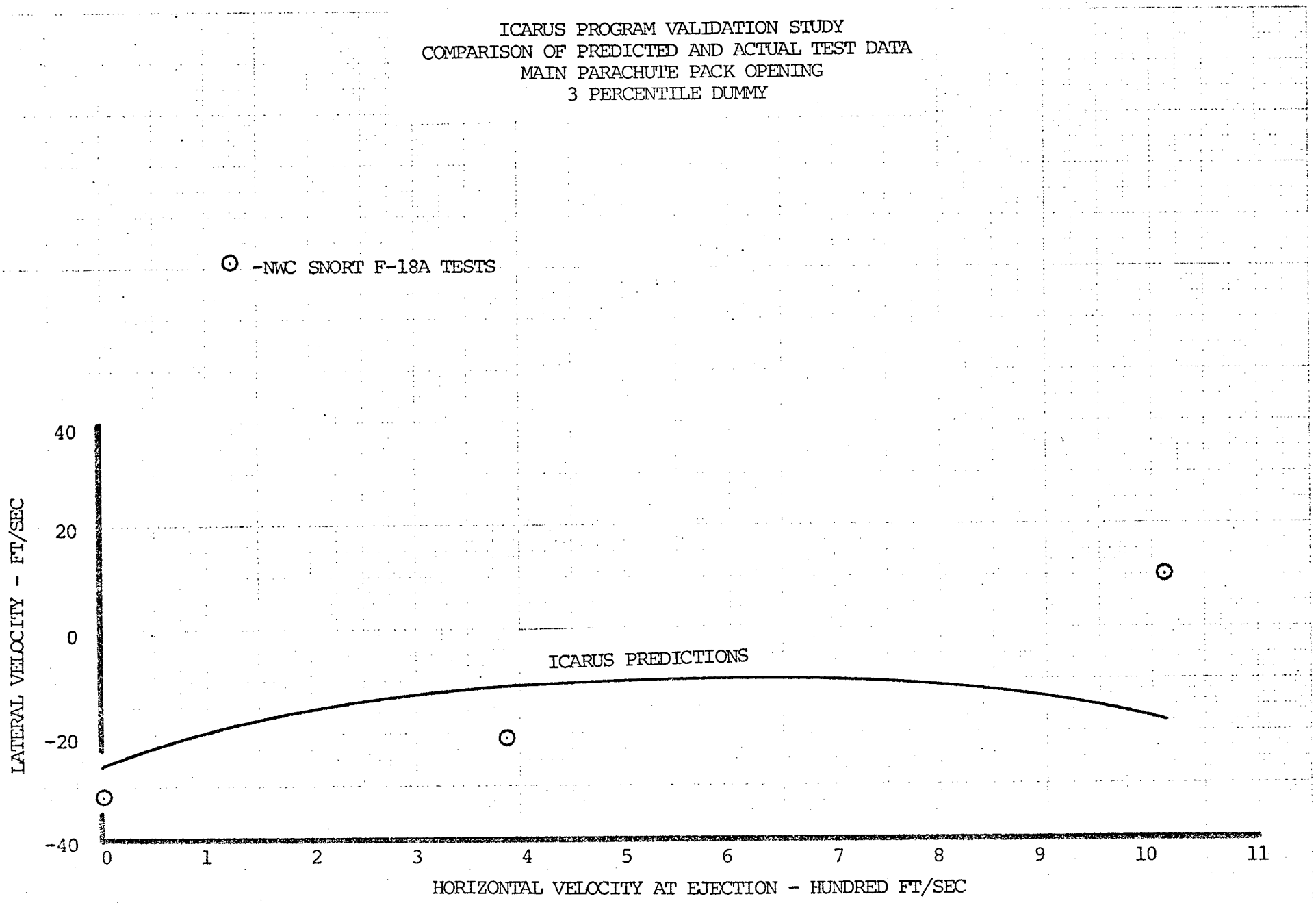


FIGURE F-89

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE RISER LINE STRETCH
3 PERCENTILE DUMMY

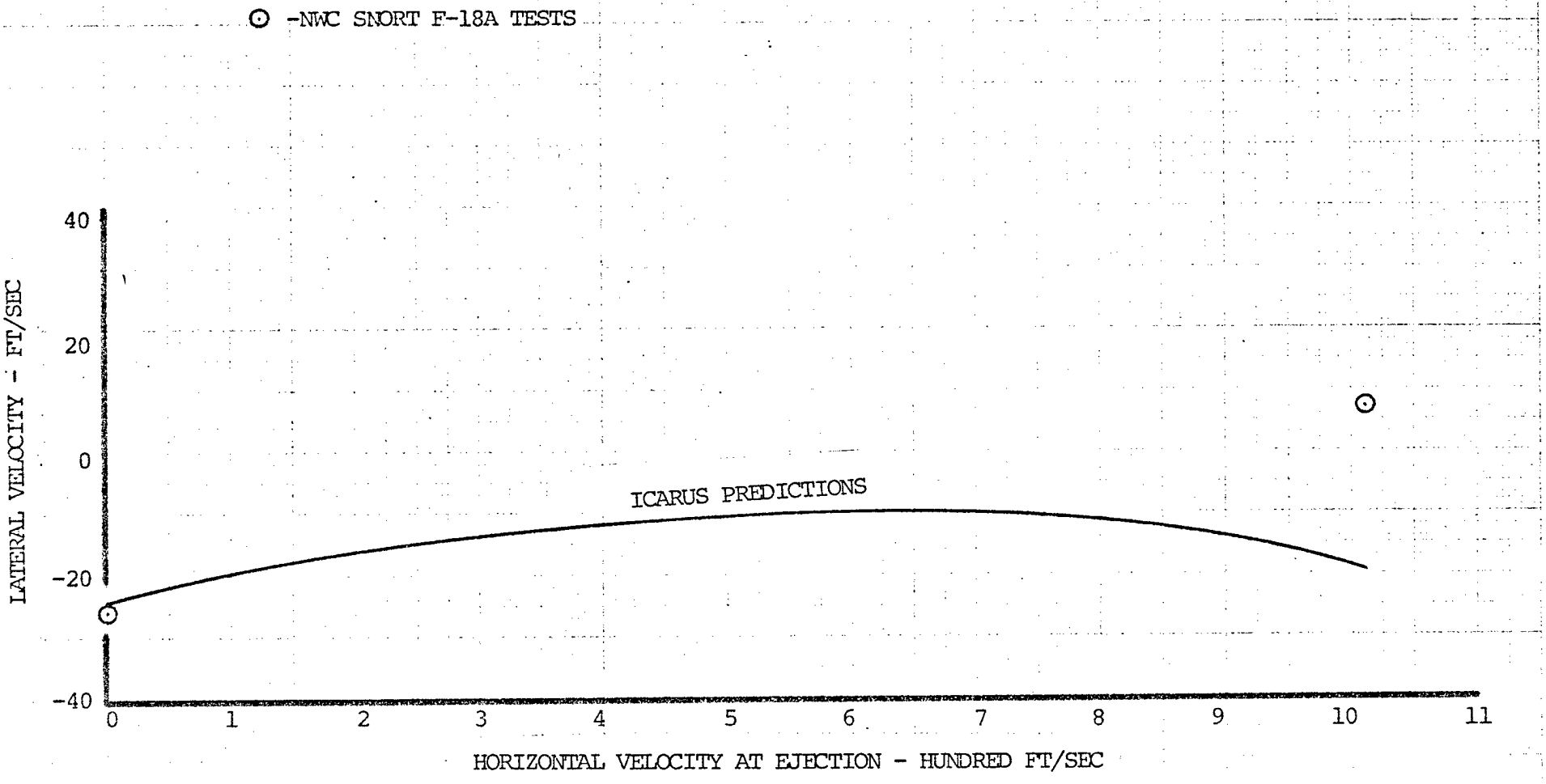


FIGURE F-90

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE FULL INFLATION
3 PERCENTILE DUMMY

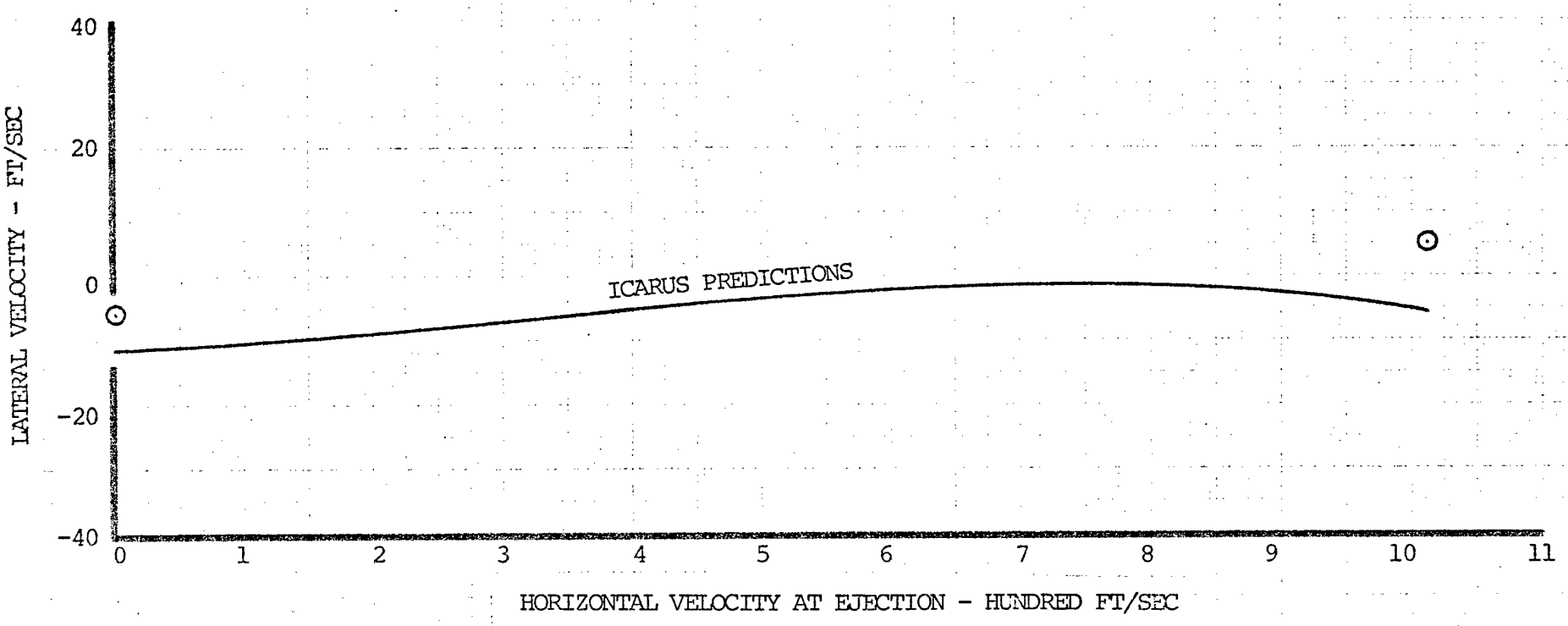


FIGURE F-91

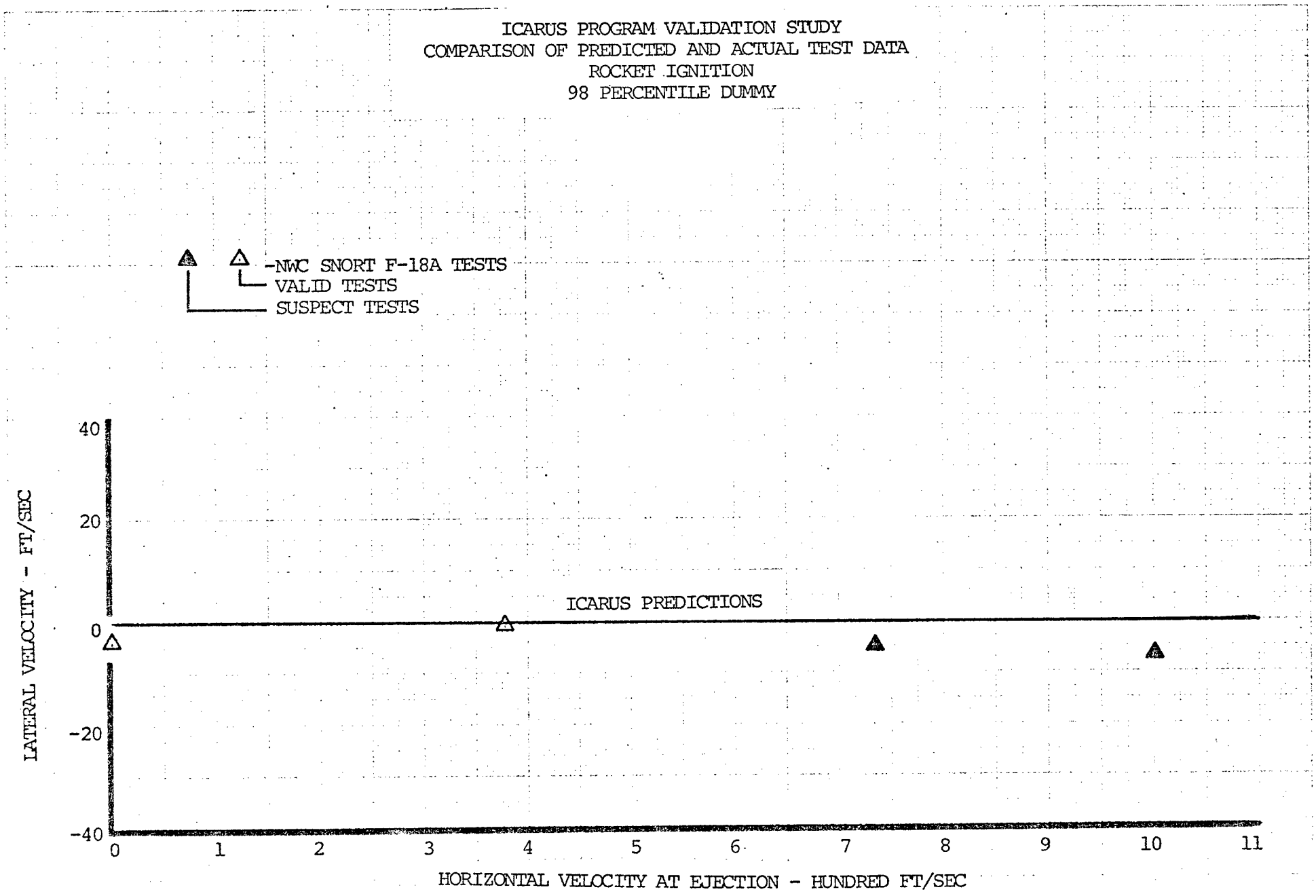

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET IGNITION
98 PERCENTILE DUMMY
-NWC SNORT F-18A TESTS
VALID TESTS
SUSPECT TESTS
ICARUS PREDICTIONS
LATERAL VELOCITY - FT/SEC
40
20
0
-20
-40
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-92

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
ROCKET BURNOUT
98 PERCENTILE DUMMY

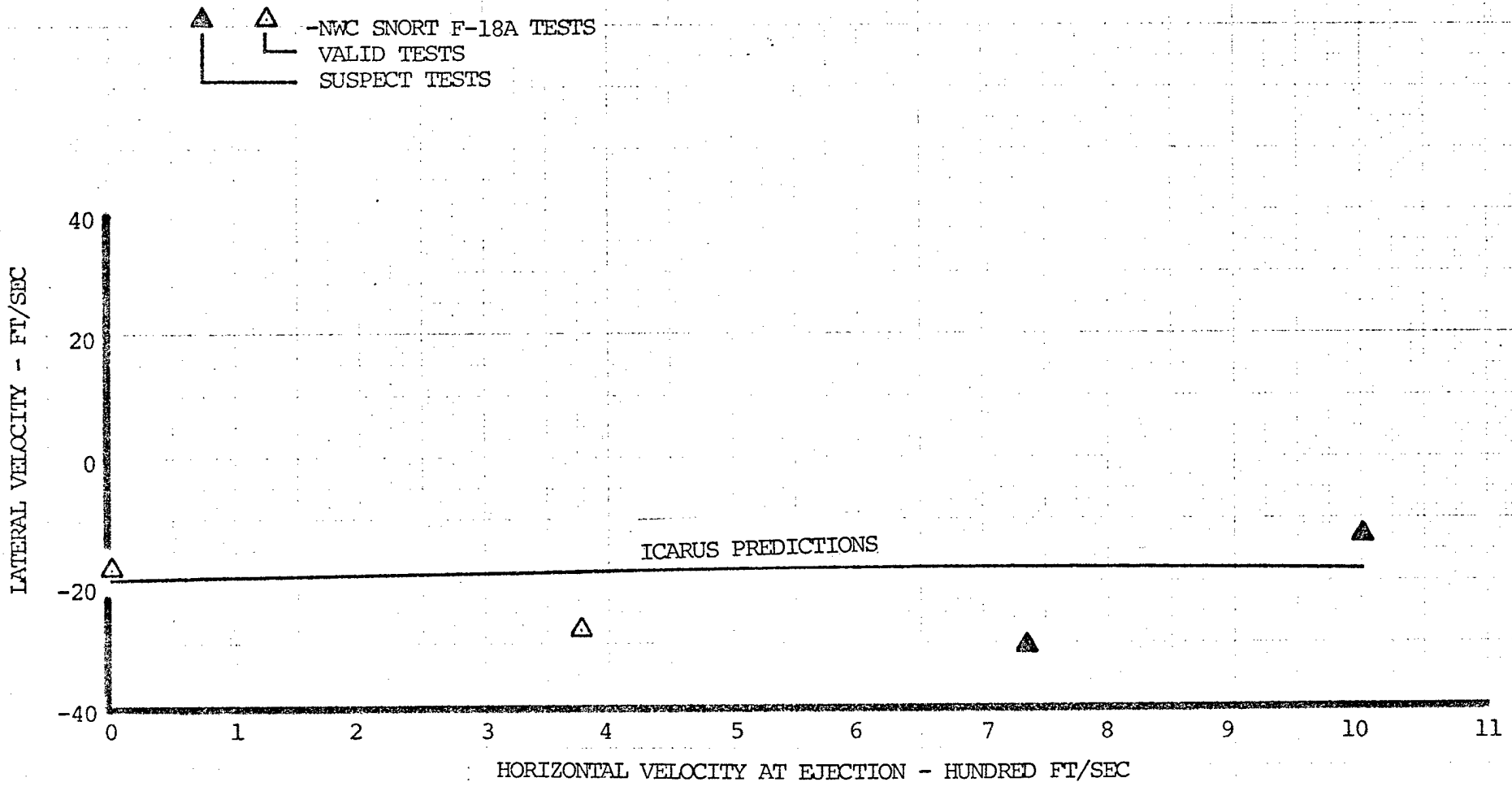


FIGURE F-93

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE GUN FIRE
98 PERCENTILE DUMMY

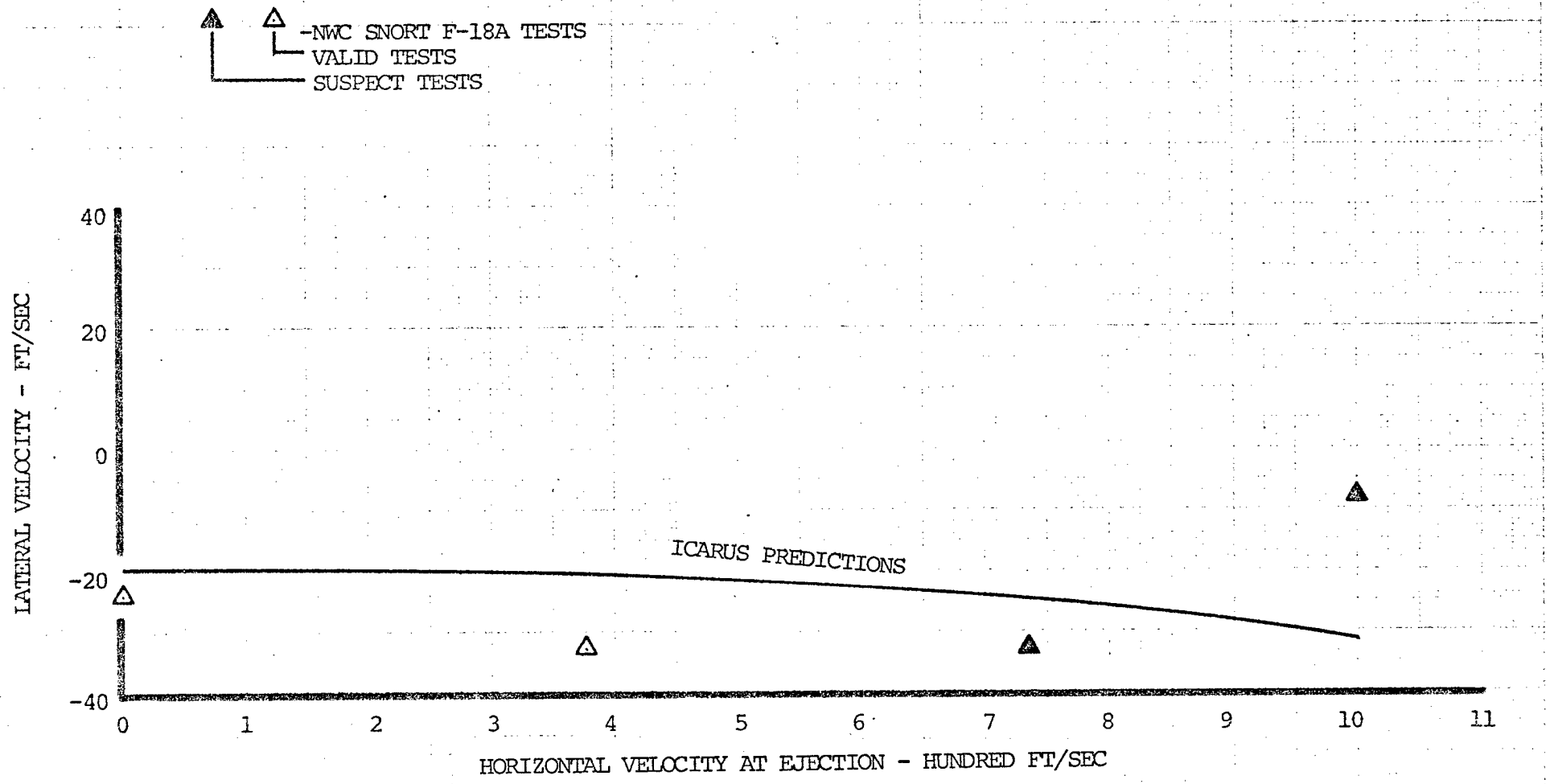


FIGURE F-94

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DROGUE PARACHUTE FULL INFLATION
98 PERCENTILE DUMMY

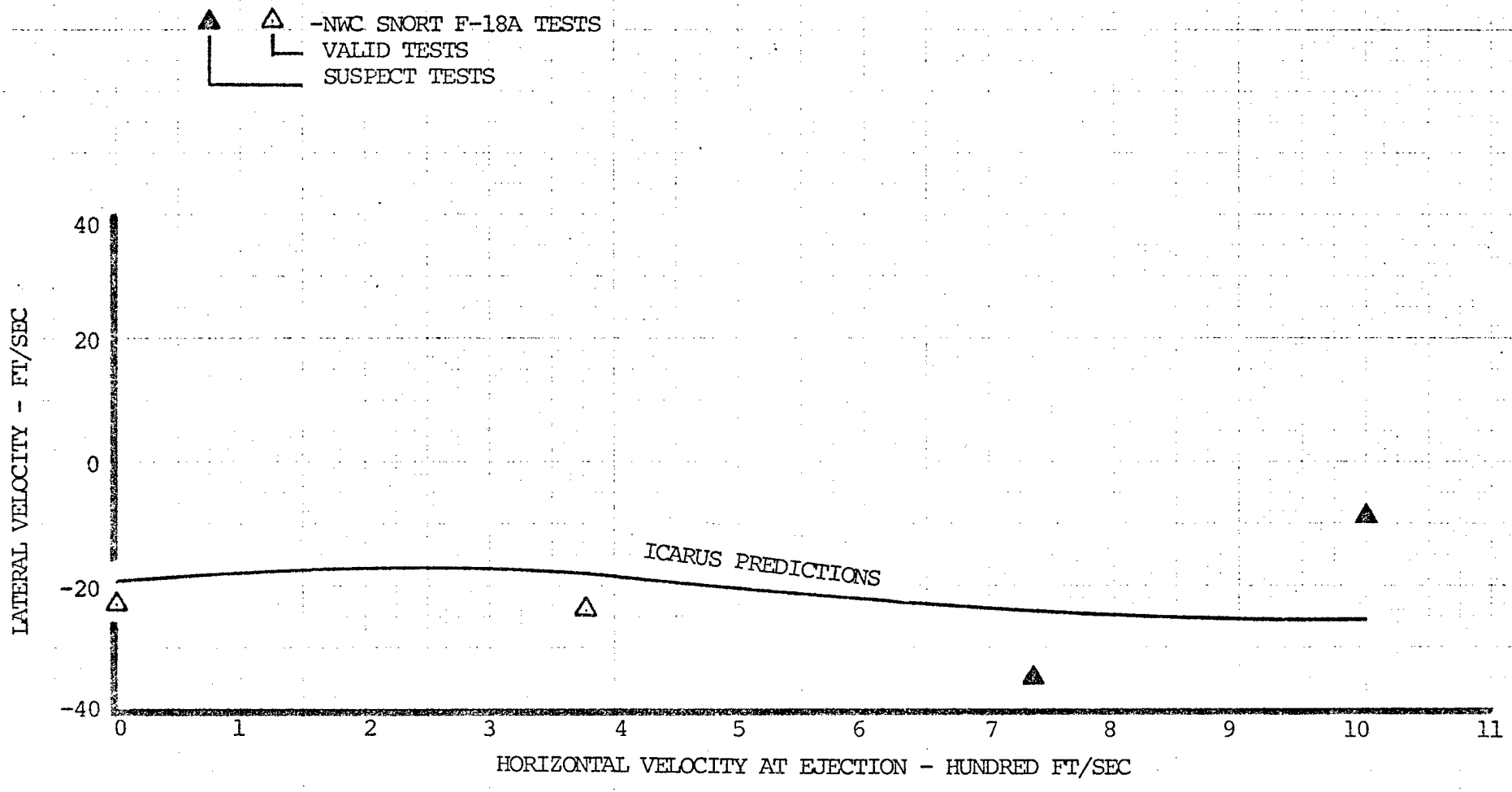


FIGURE F-95

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE PACK OPENING
98 PERCENTILE DUMMY

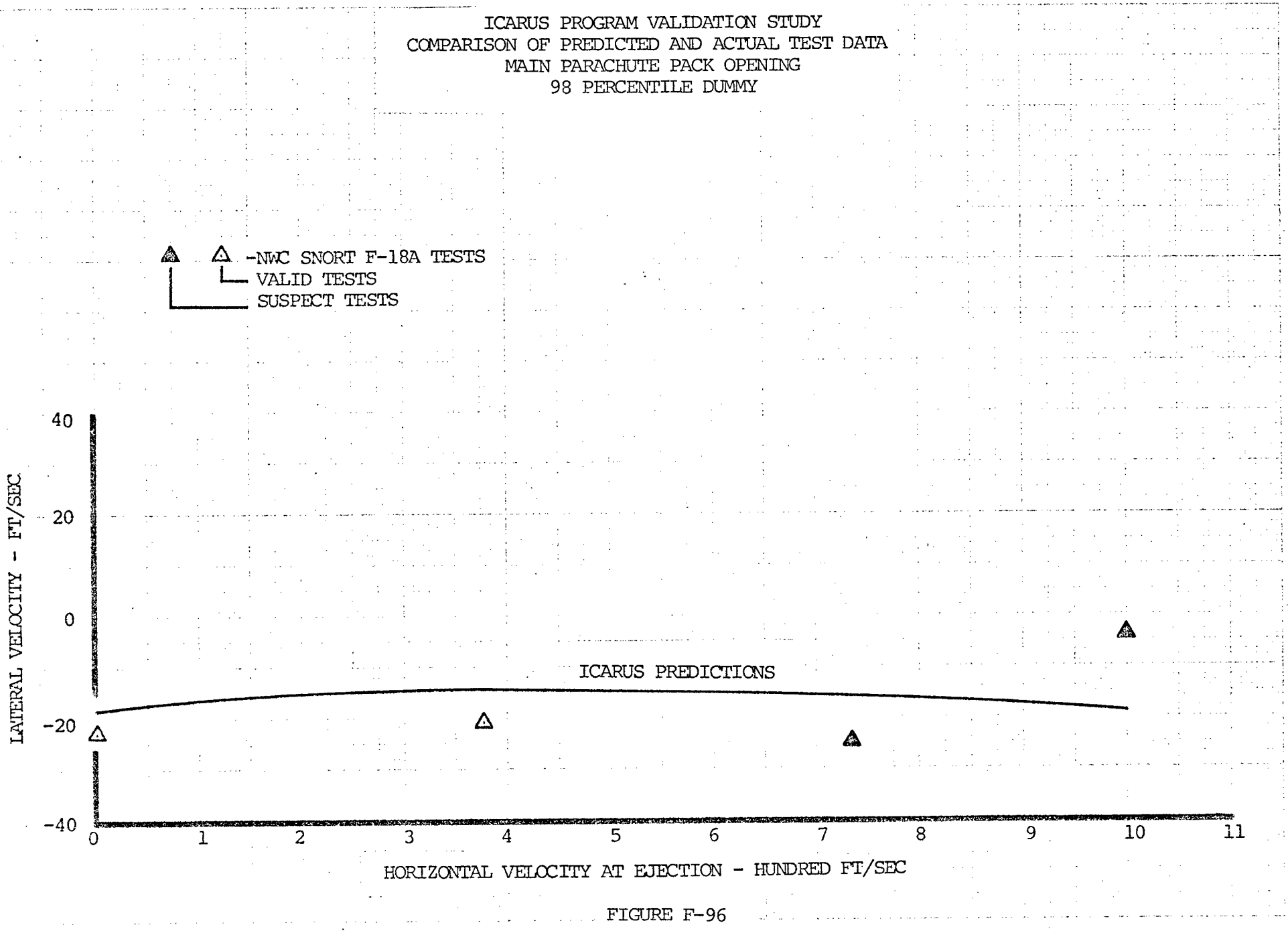


FIGURE F-96

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE RISER LINE STRETCH
98 PERCENTILE DUMMY

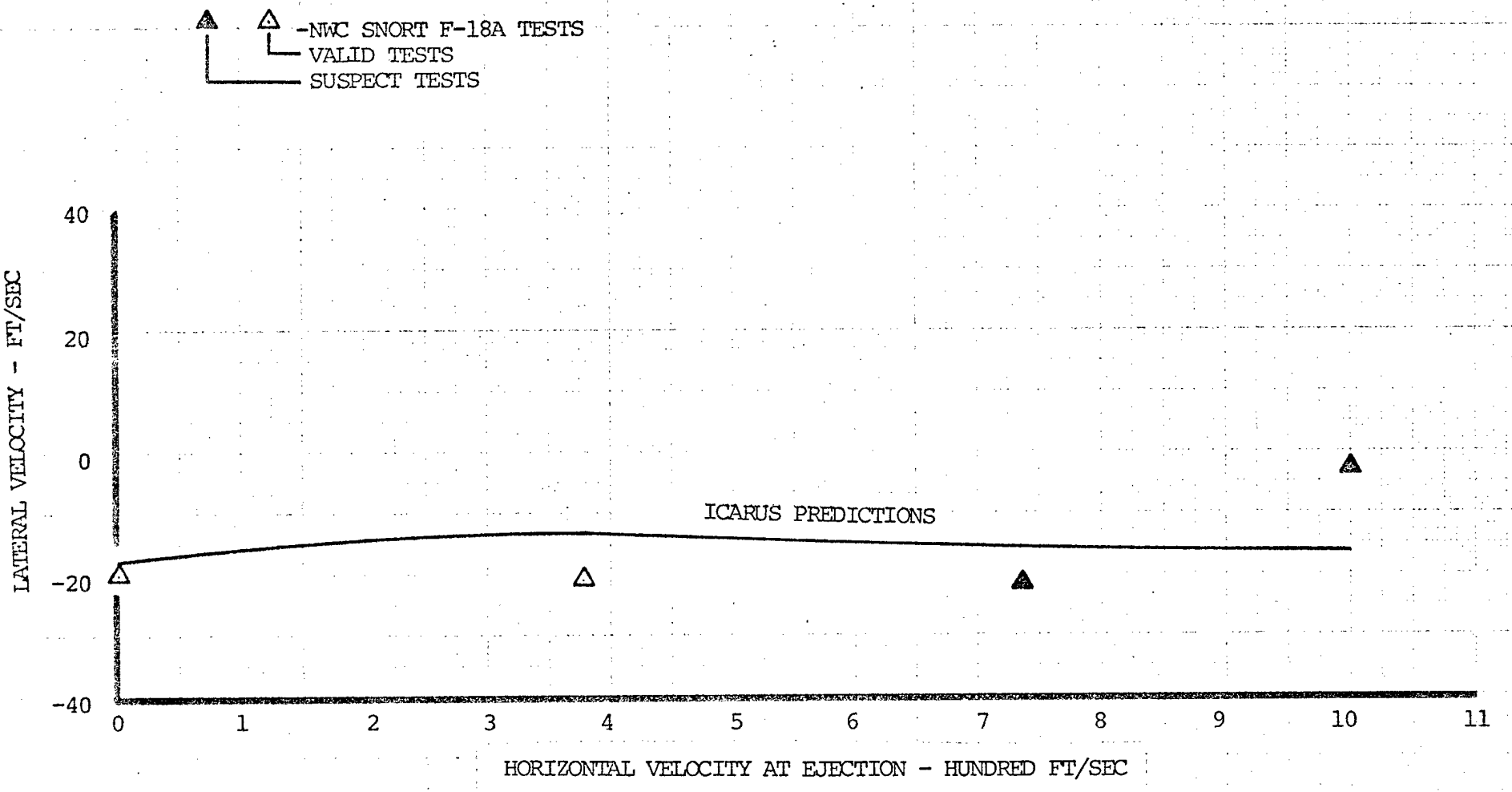


FIGURE F-97

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAIN PARACHUTE FULL INFLATION
98 PERCENTILE DUMMY

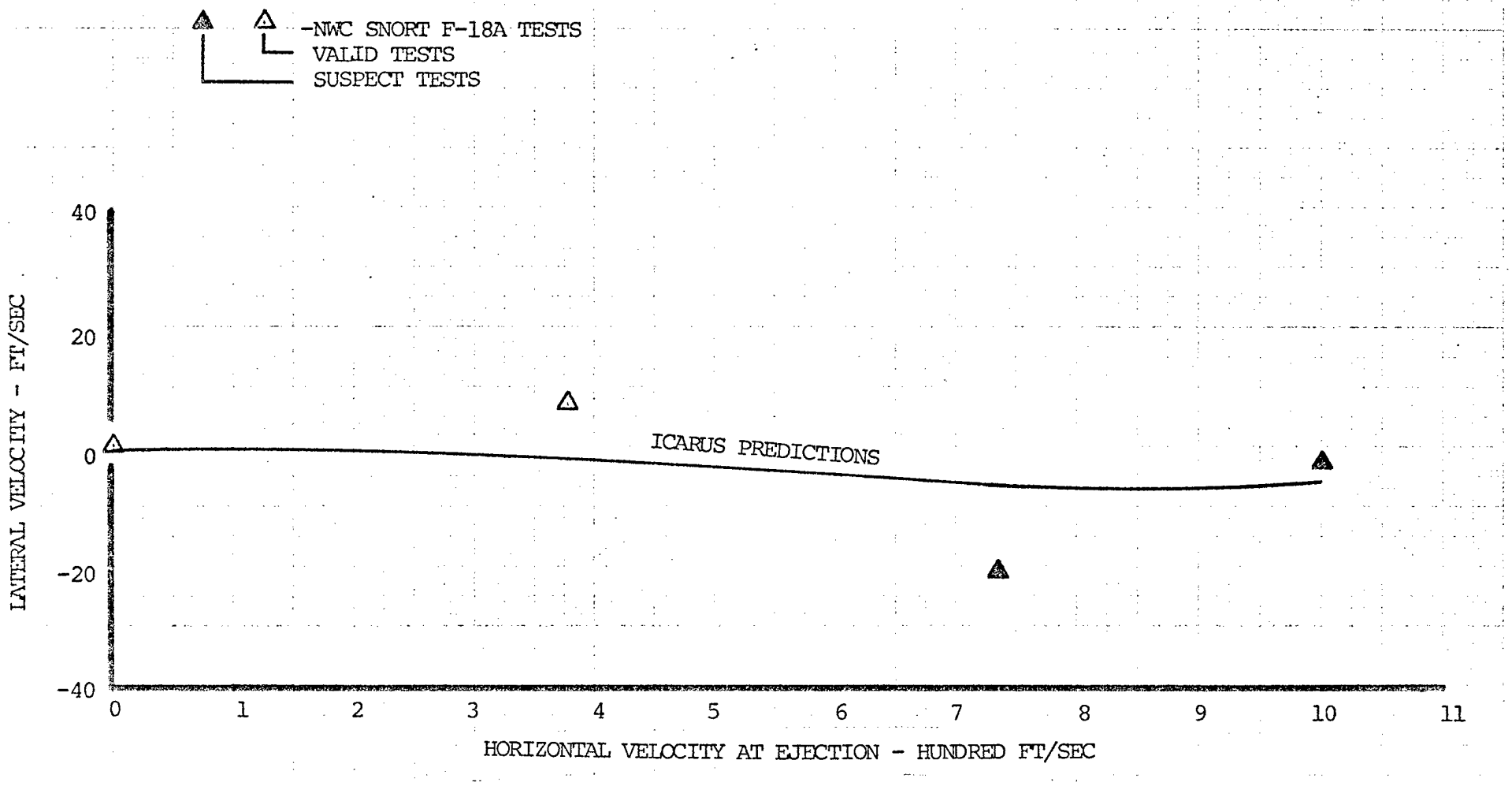


FIGURE F-98

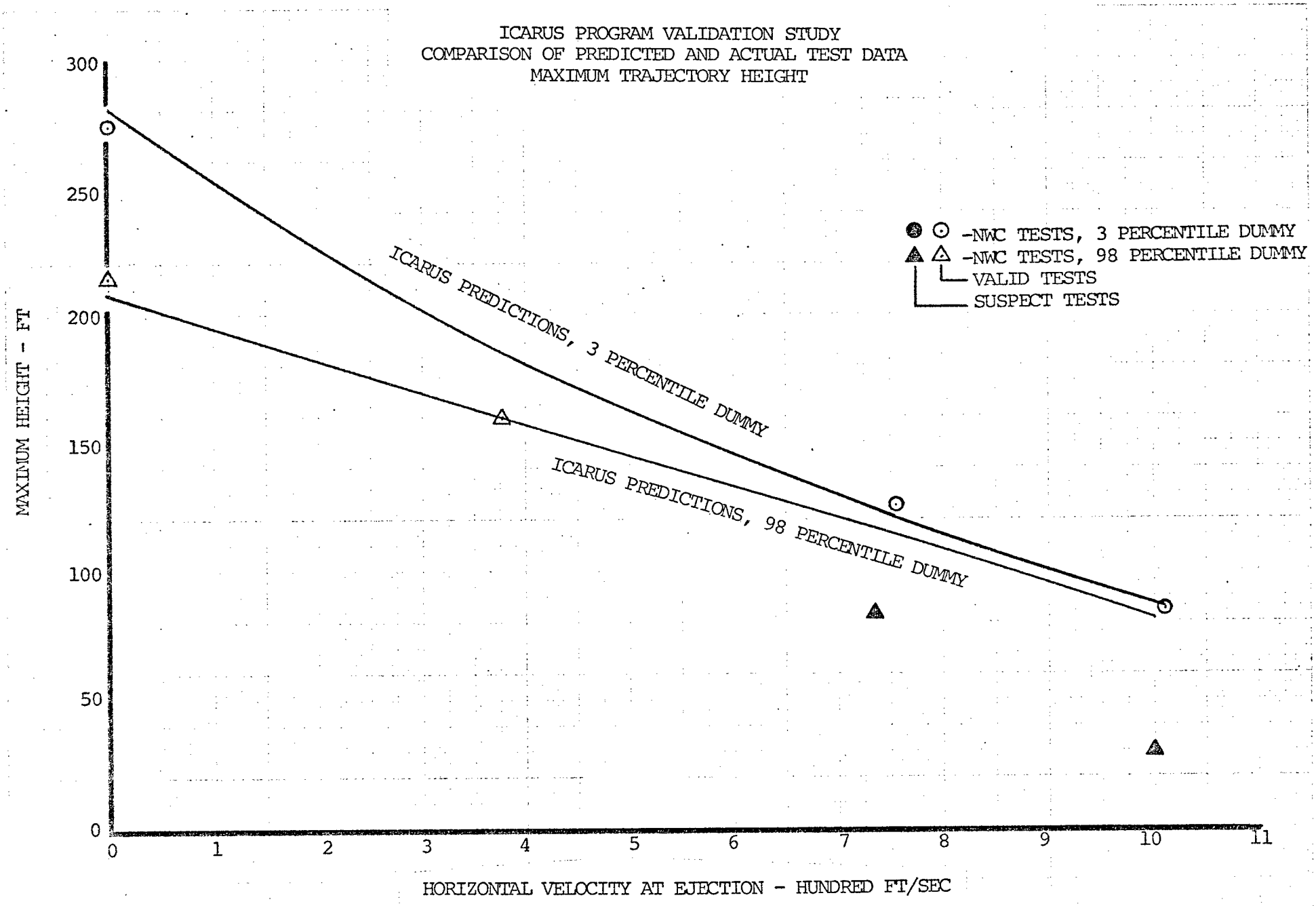

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
MAXIMUM TRAJECTORY HEIGHT
300
250
200
150
100
50
0
MAXIMUM HEIGHT - FT
ICARUS PREDICTIONS, 3 PERCENTILE DUMMY
ICARUS PREDICTIONS, 98 PERCENTILE DUMMY
-NWC TESTS, 3 PERCENTILE DUMMY
-NWC TESTS, 98 PERCENTILE DUMMY
VALID TESTS
SUSPECT TESTS
0
1
2
3
4
5
6
7
8
9
10
11
HORIZONTAL VELOCITY AT EJECTION - HUNDRED FT/SEC

FIGURE F-99

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL TEST DATA
DOWNRANGE DISTANCE AT MAXIMUM TRAJECTORY HEIGHT

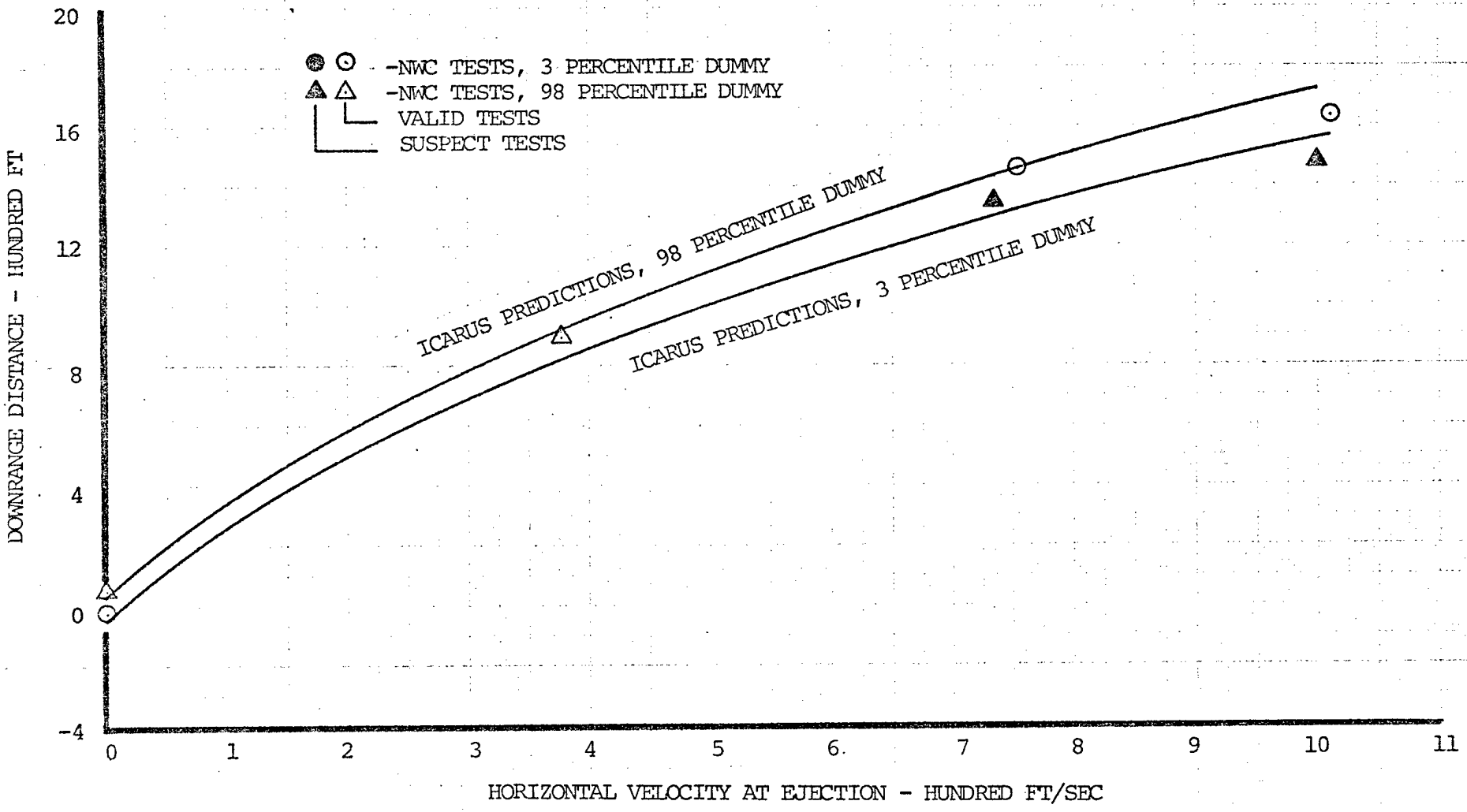


FIGURE F-100

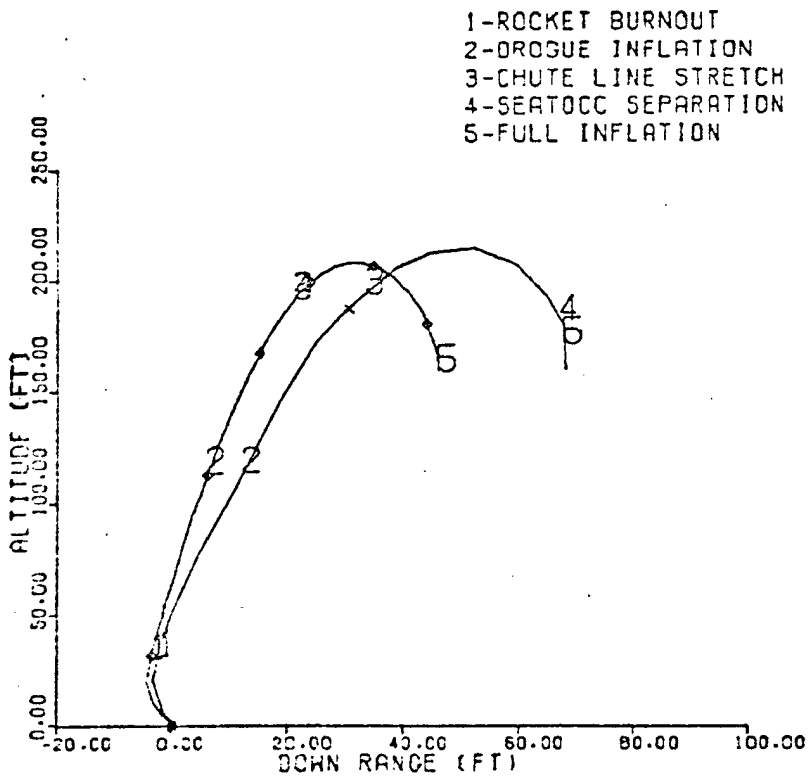
APPENDIX G

GRAPHS OF PREDICTED AND ACTUAL NWC SNORT F-18A

SLED TEST TRAJECTORY DATA

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 1 0 KEAS 98 PERCENTILE DUMMY

X ACTUAL
◇ PREDICTED



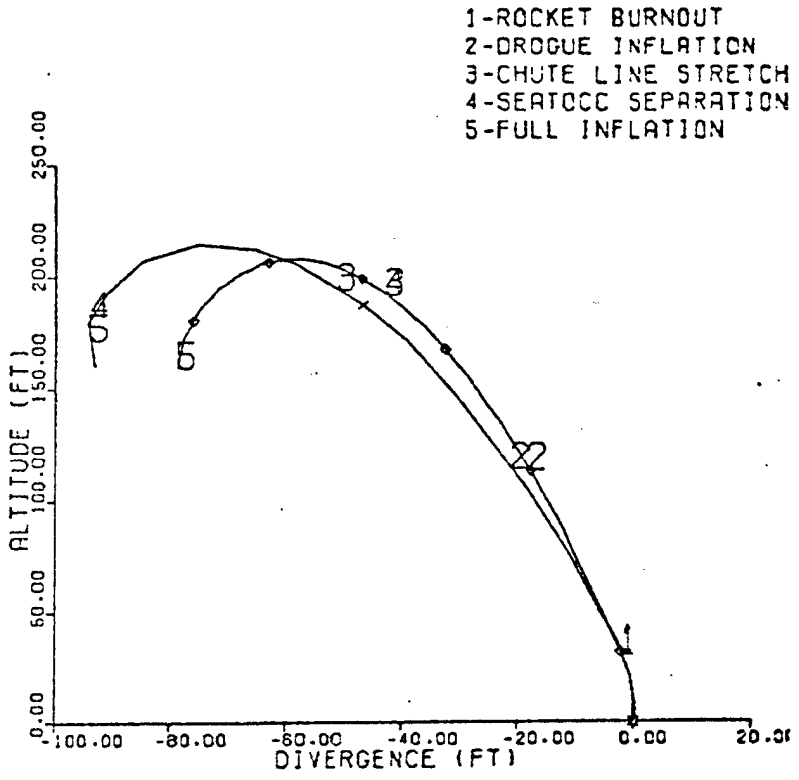


FIGURE G-1

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18ANWC SNORT TEST DATA
TEST 1 .0 KEAS 98 PERCENTILE DUMMY

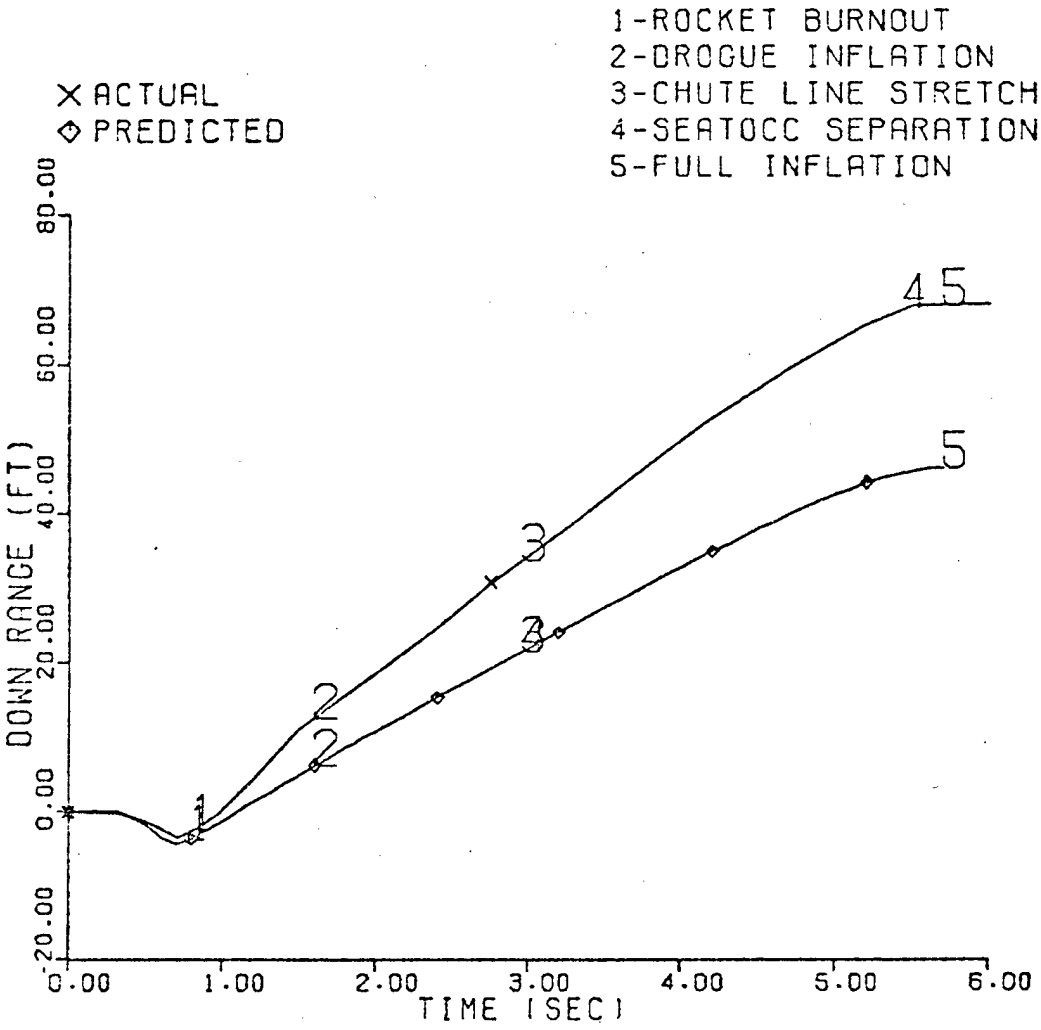


FIGURE G-2

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18ANWC SNORT TEST DATA
TEST 1 0 KEAS 98 PERCENTILE DUMMY

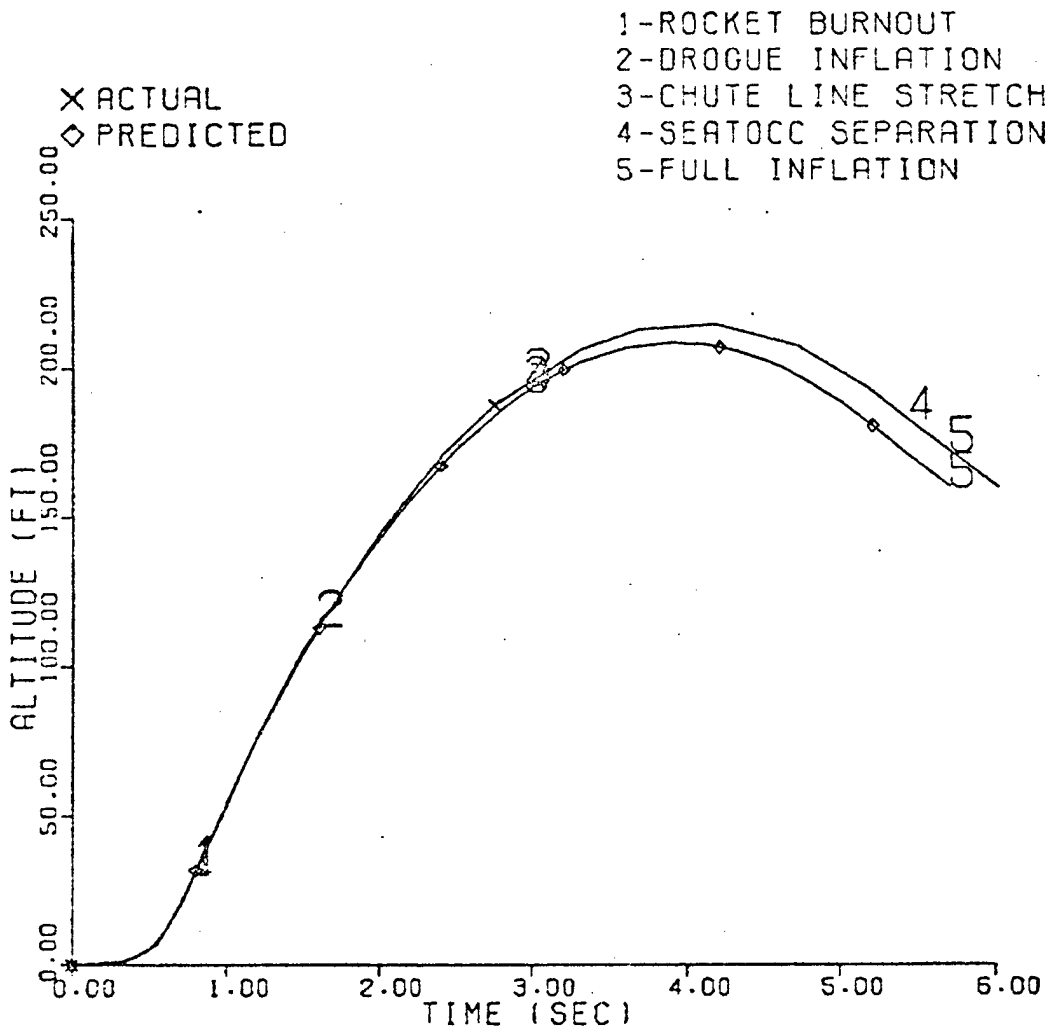


FIGURE G-3

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18ANWC SNORT TEST DATA
TEST 1 0 KEAS 98 PERCENTILE DUMMY

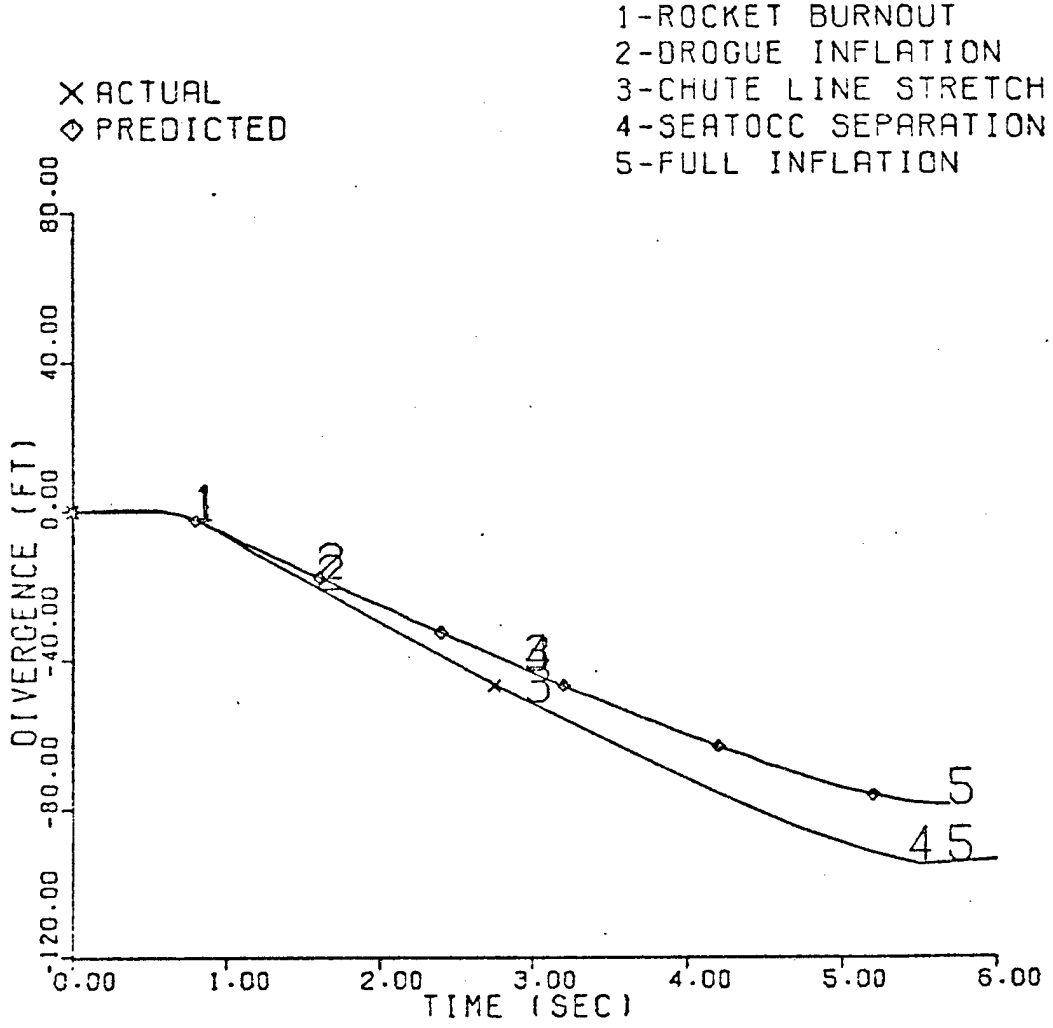


FIGURE G-4

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 1 0 KEAS 98 PERCENTILE DUMMY

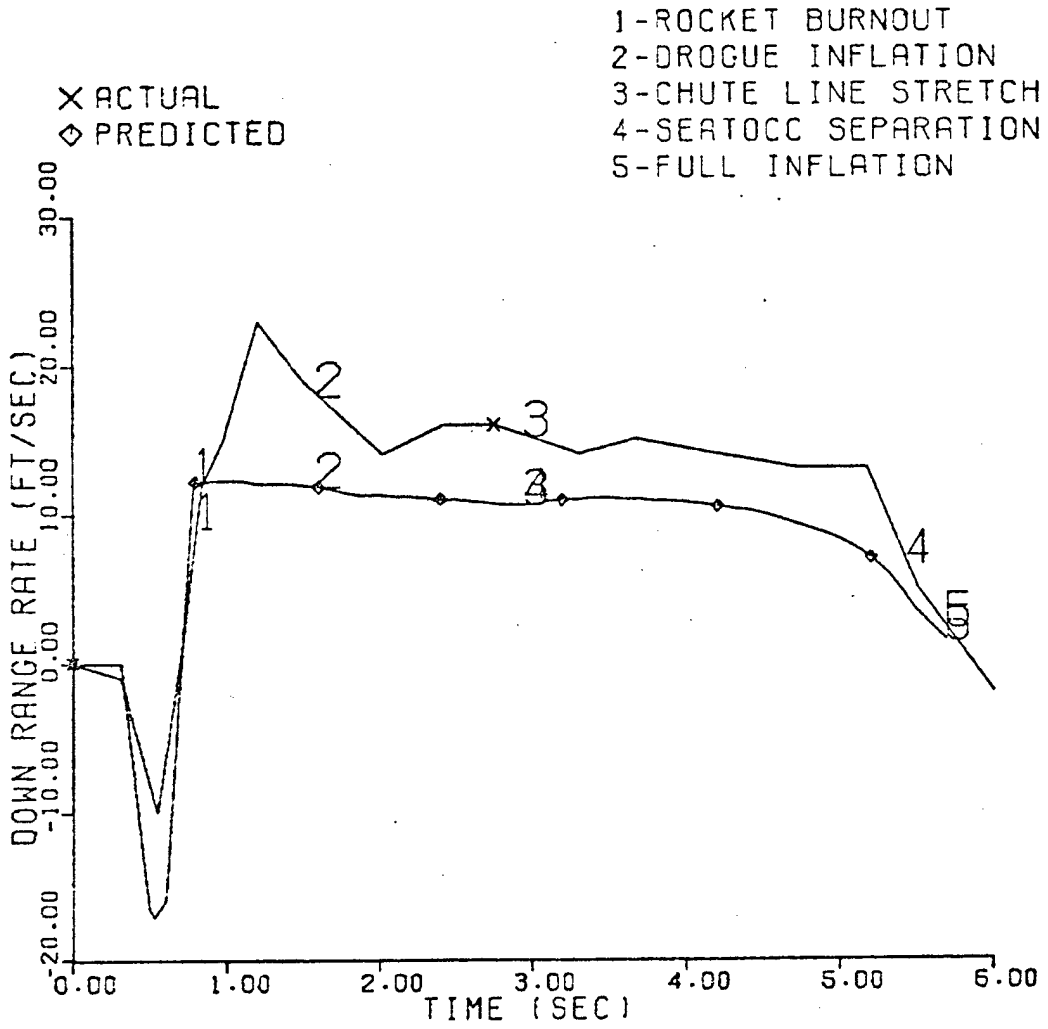


FIGURE G-5

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 1 0 KEAS 98 PERCENTILE DUMMY

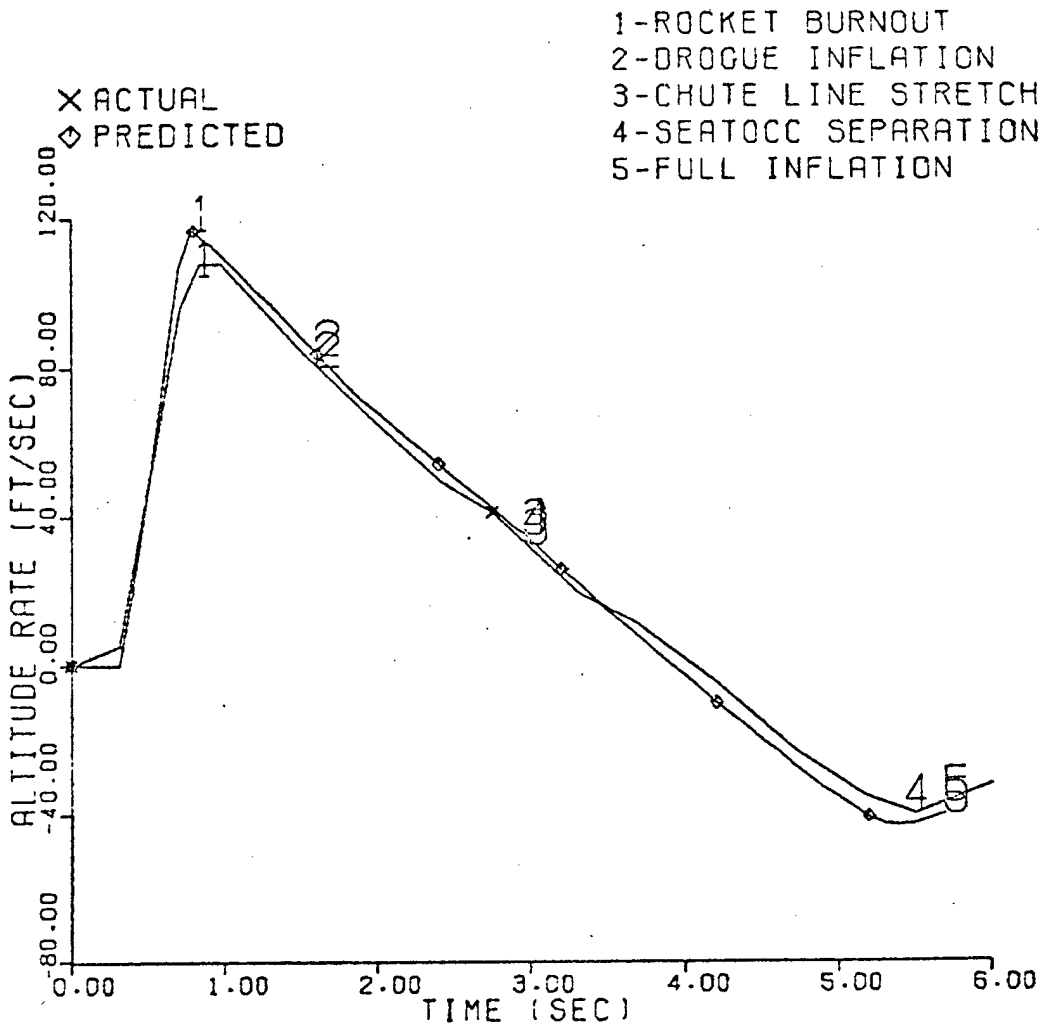


FIGURE G-6

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 1 0 KEAS 98 PERCENTILE DUMMY

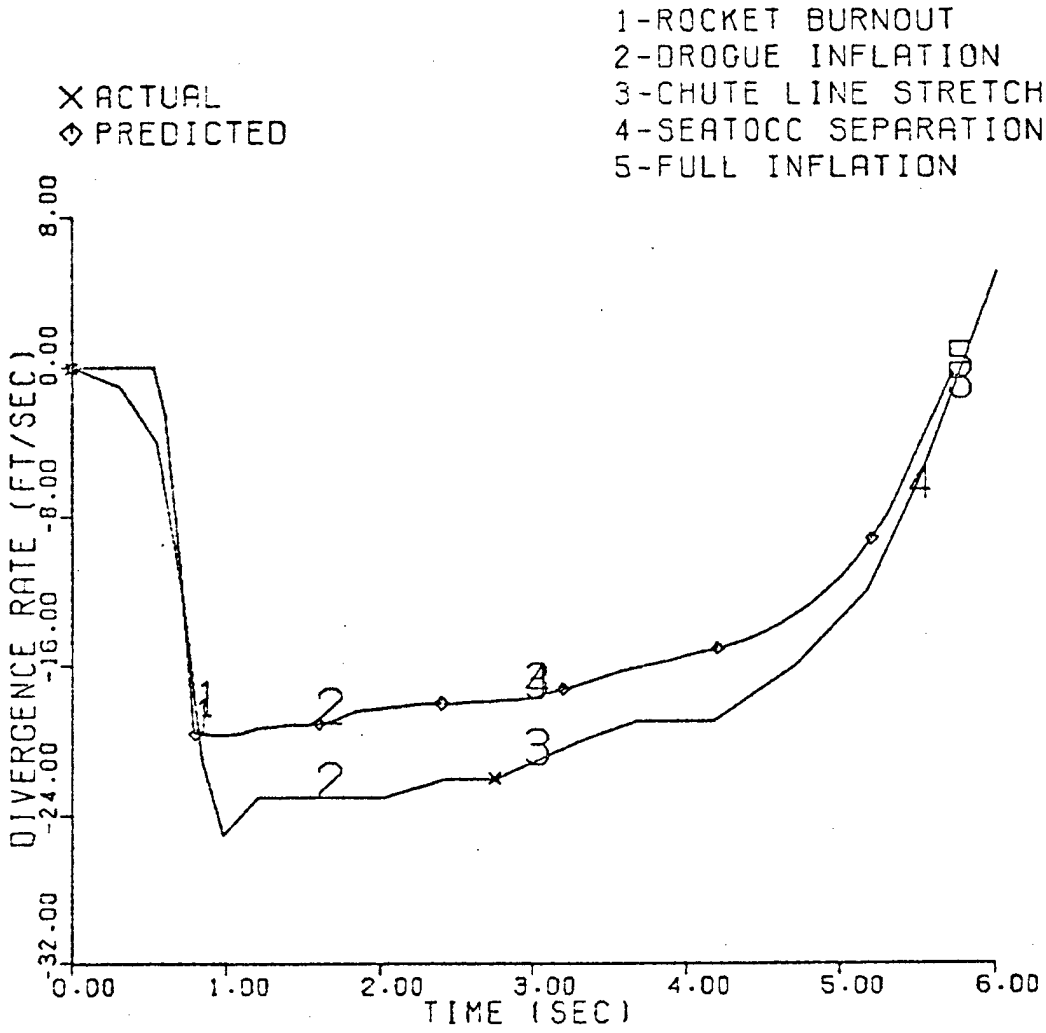


FIGURE G-7

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 2 225 KEAS 98 PERCENTILE DUMMY

X ACTUAL
◇ PREDICTED

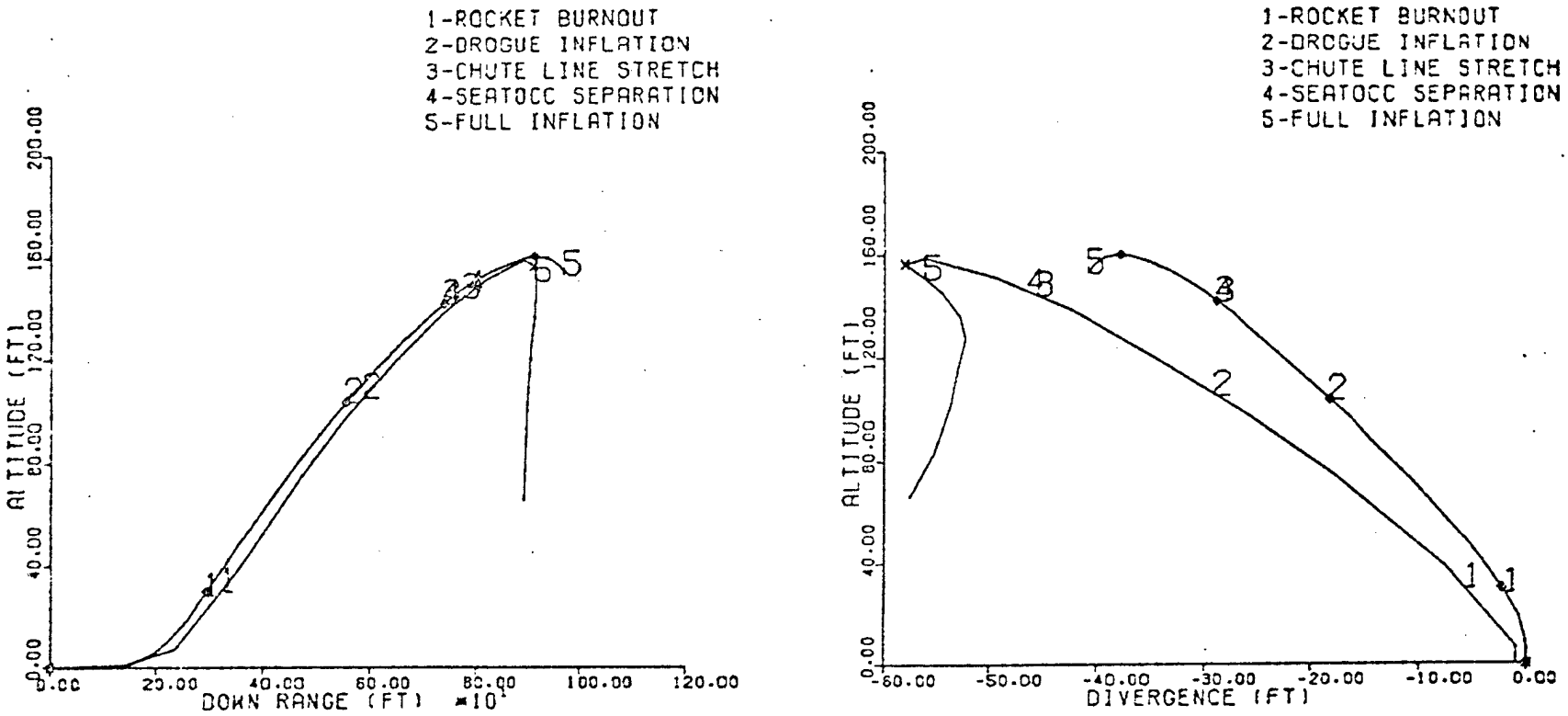


FIGURE G-8

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 2 225 KEAS 98 PERCENTILE DUMMY

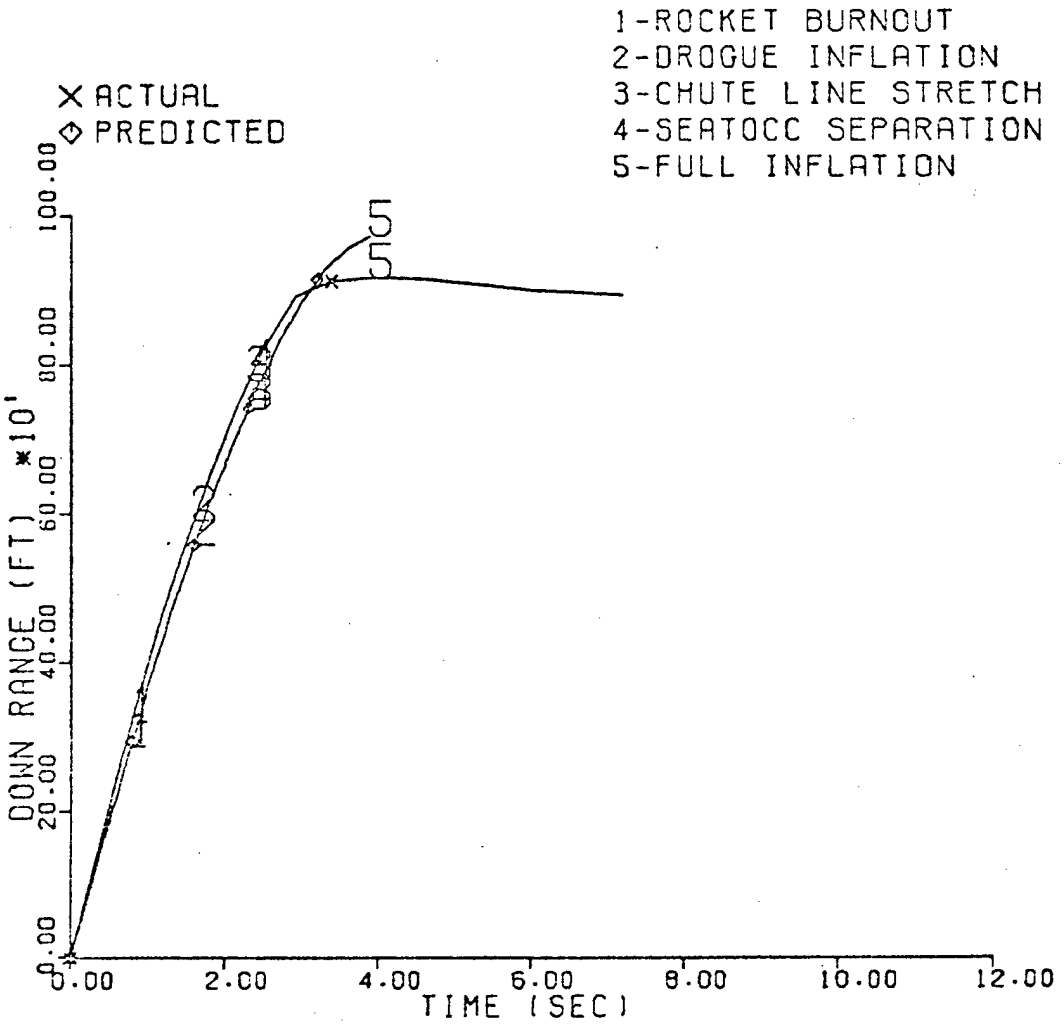


FIGURE G-9

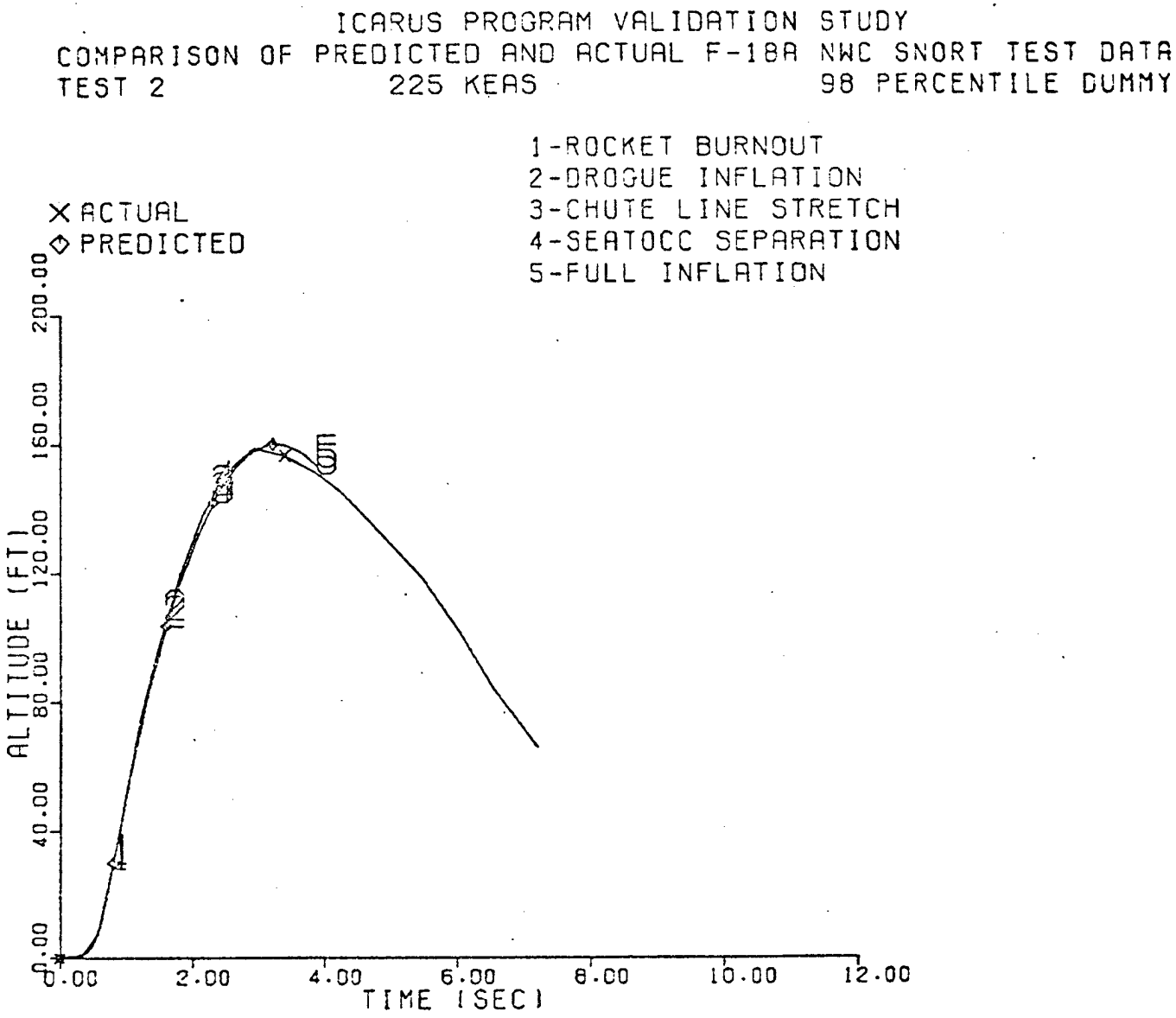

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 2
225 KEAS
98 PERCENTILE DUMMY
1-ROCKET BURNOUT
2-DROGUE INFLATION
3-CHUTE LINE STRETCH
4-SEATOCC SEPARATION
5-FULL INFLATION
X ACTUAL
◇ PREDICTED
ALTITUDE (FT)
0.00
40.00
80.00
120.00
160.00
200.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
TIME (SEC)

FIGURE G-10

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 2 225 KEAS 98 PERCENTILE DUMMY

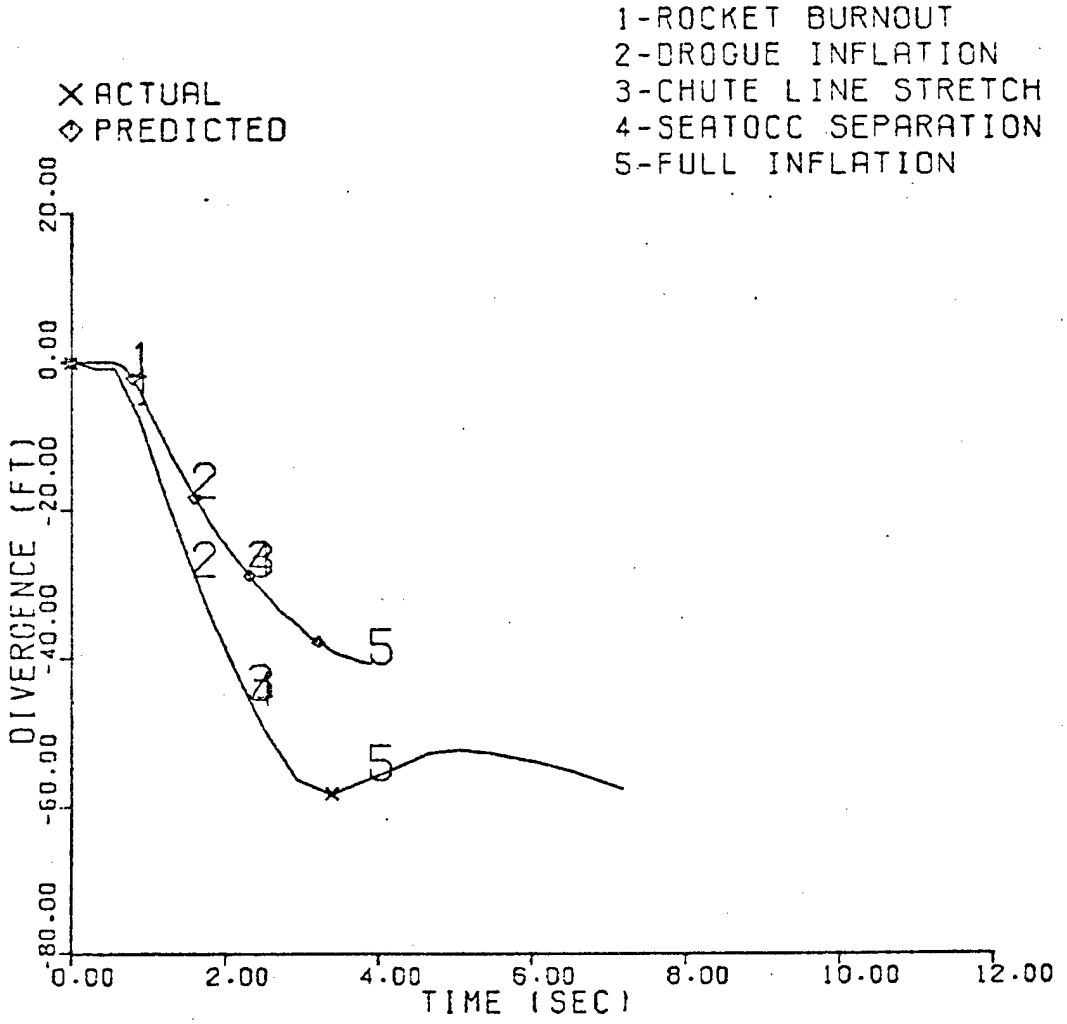


FIGURE G-11

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 2 225 KEAS 98 PERCENTILE DUMMY

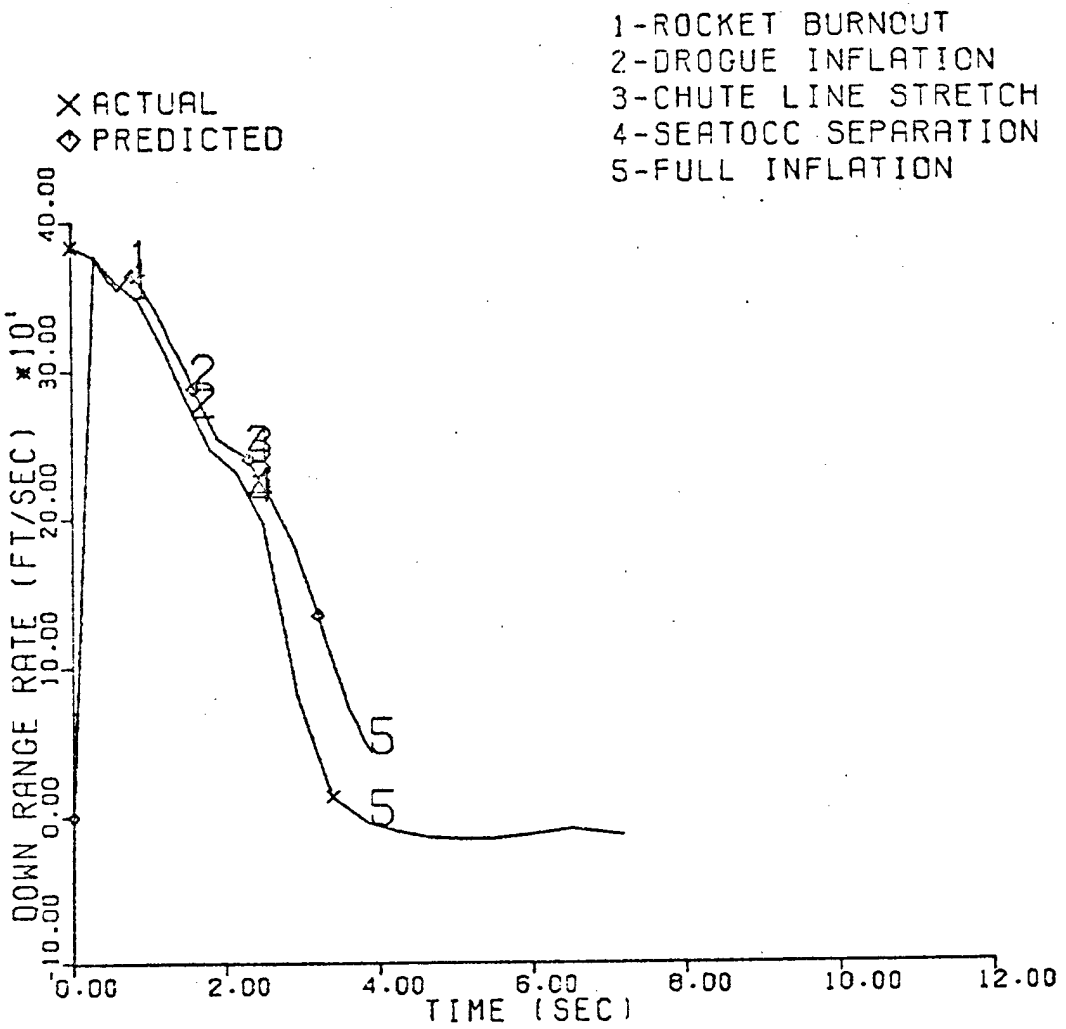


FIGURE G-12

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 2 225 KEAS 98 PERCENTILE DUMMY

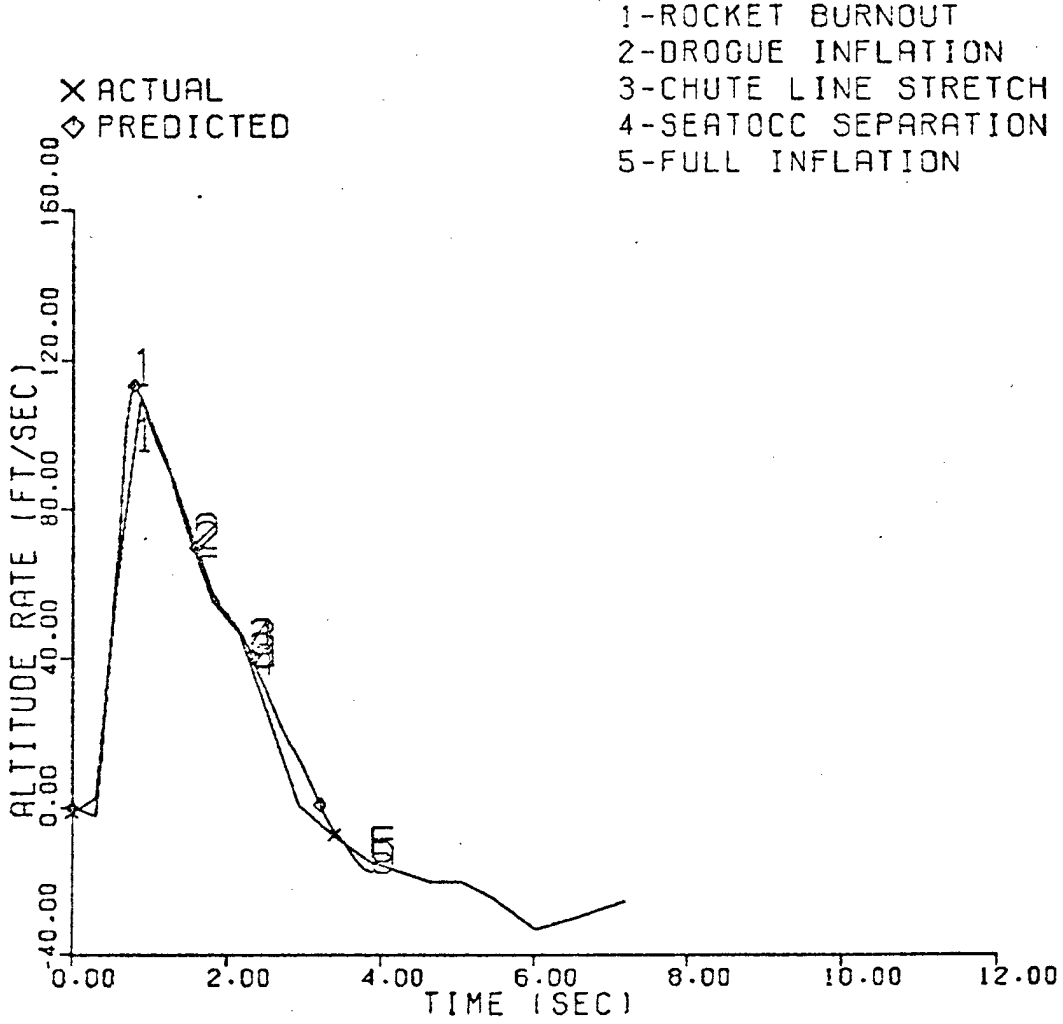


FIGURE G-13

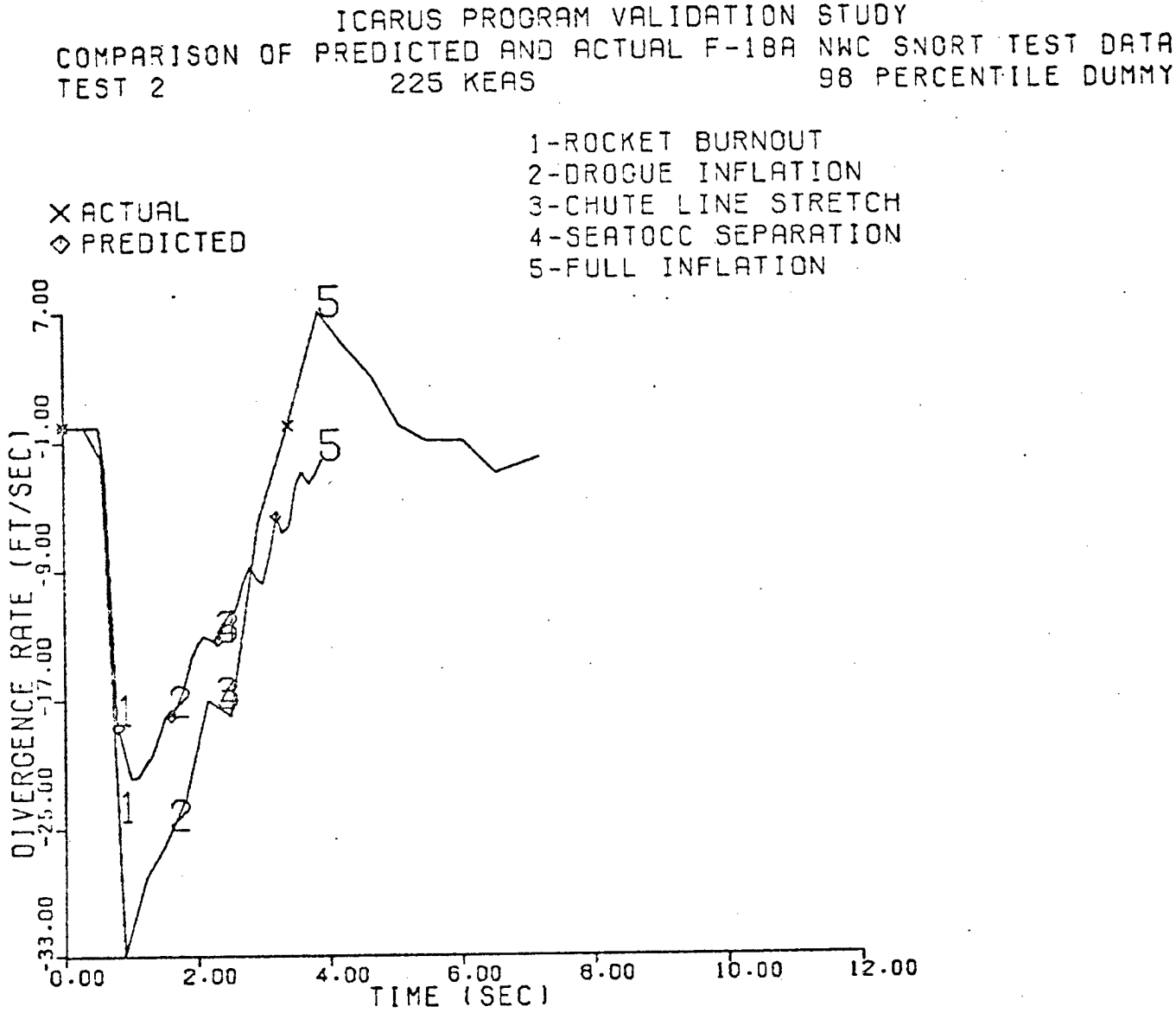
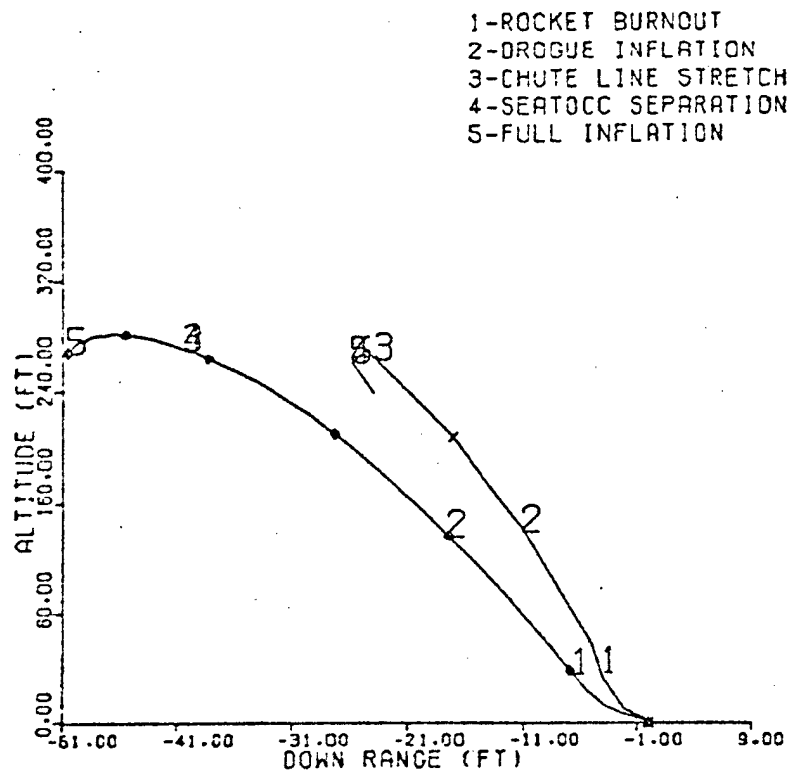

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 2
225 KEAS
98 PERCENTILE DUMMY
1-ROCKET BURNOUT
2-DROGUE INFLATION
3-CHUTE LINE STRETCH
4-SEATOCC SEPARATION
5-FULL INFLATION
X ACTUAL
◇ PREDICTED
DIVERGENCE RATE (FT/SEC)
7.00
-1.00
-9.00
-17.00
-25.00
-33.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
TIME (SEC)

FIGURE G-14

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 3 0 KEAS 3 PERCENTILE DUMMY

X ACTUAL
◇ PREDICTED



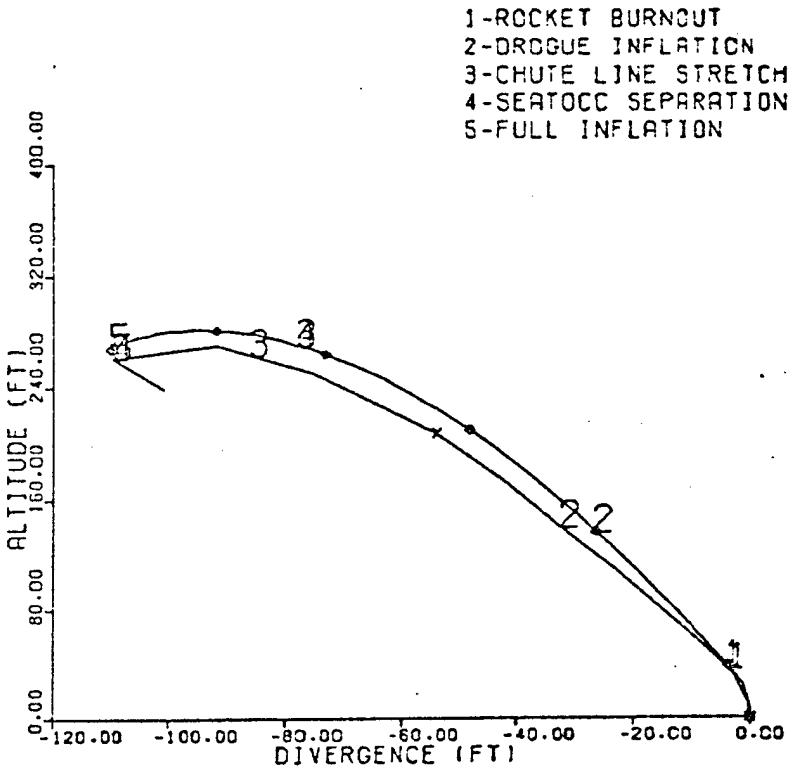


FIGURE G-15

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 3 0 KEAS 3 PERCENTILE DUMMY

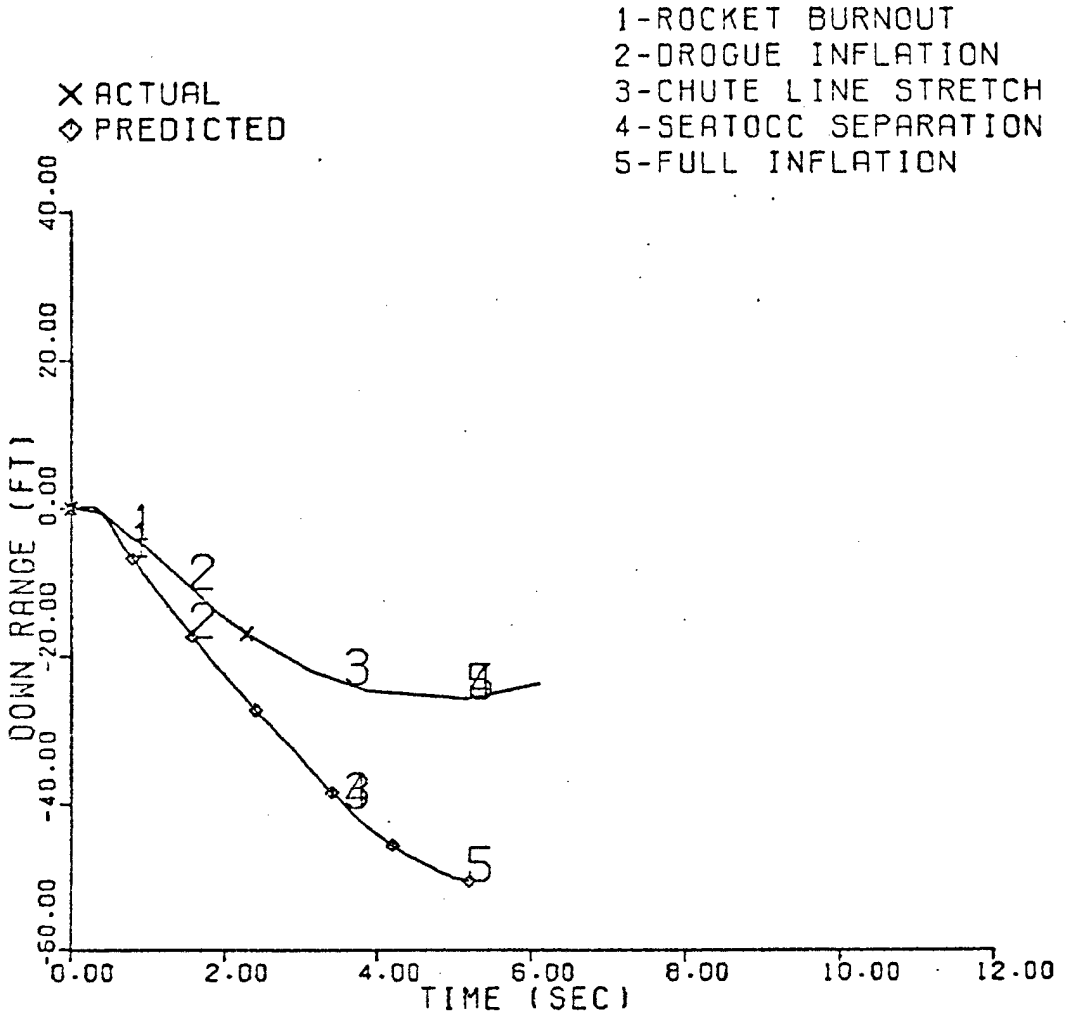


FIGURE G-16

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 3 0 KEAS 3 PERCENTILE DUMMY

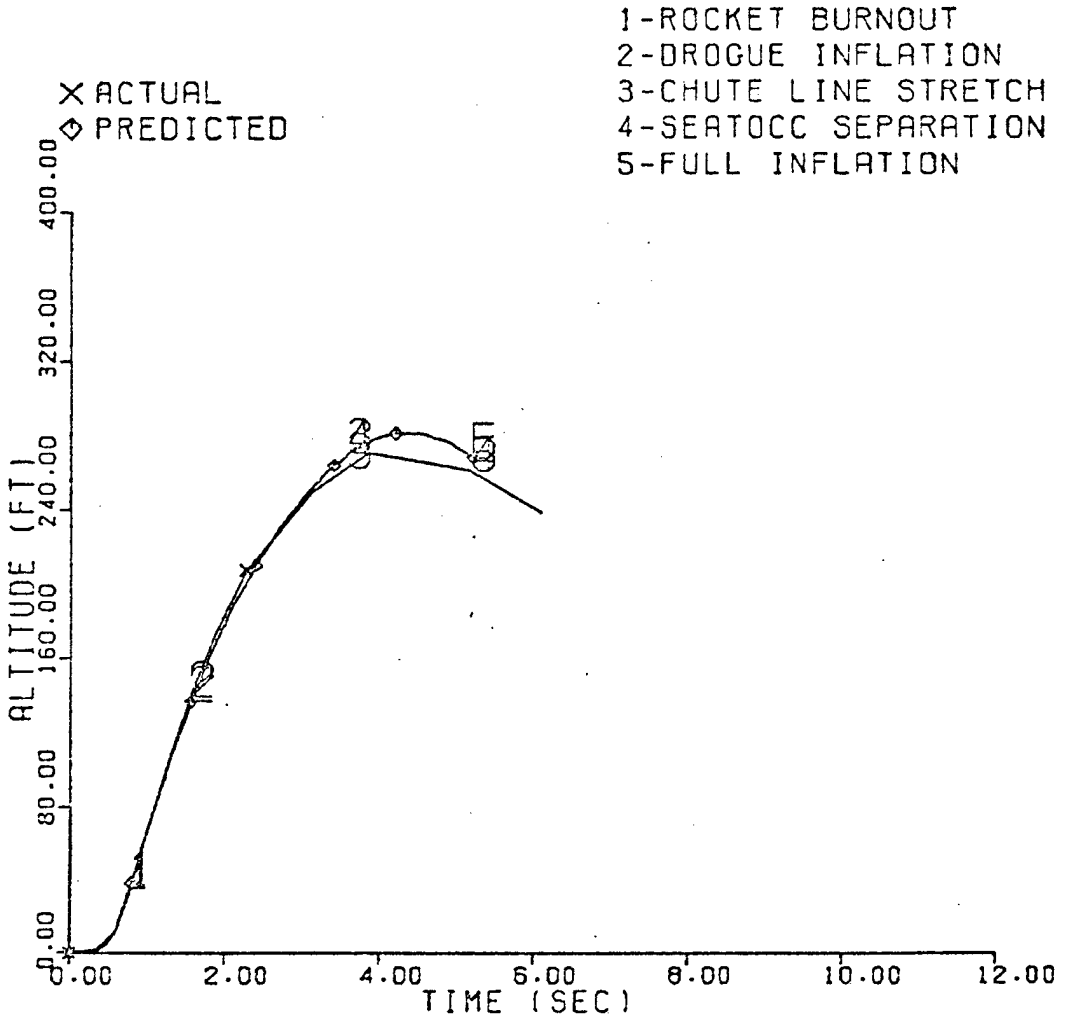


FIGURE G-17

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 3 0 KEAS 3 PERCENTILE DUMMY

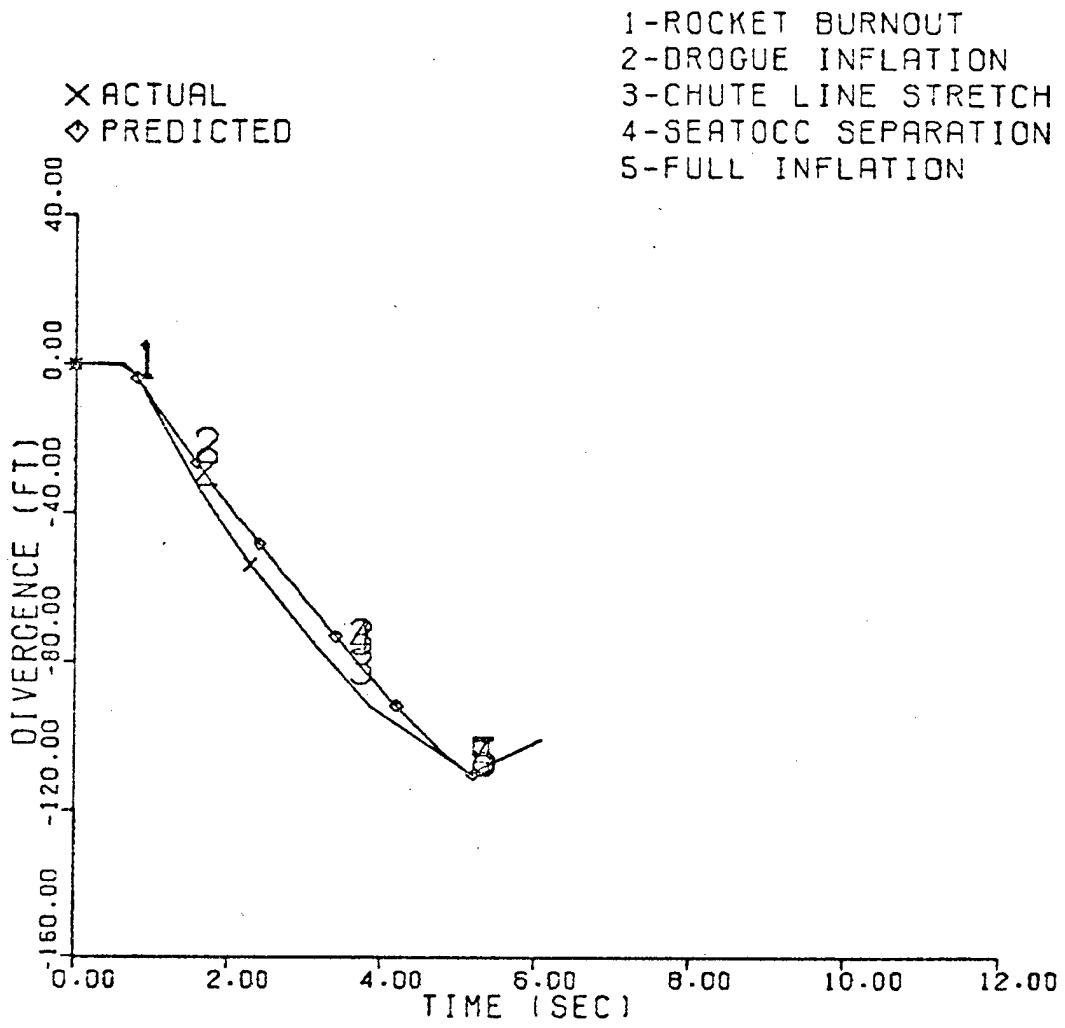


FIGURE G-18

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 3 0 KEAS 3 PERCENTILE DUMMY

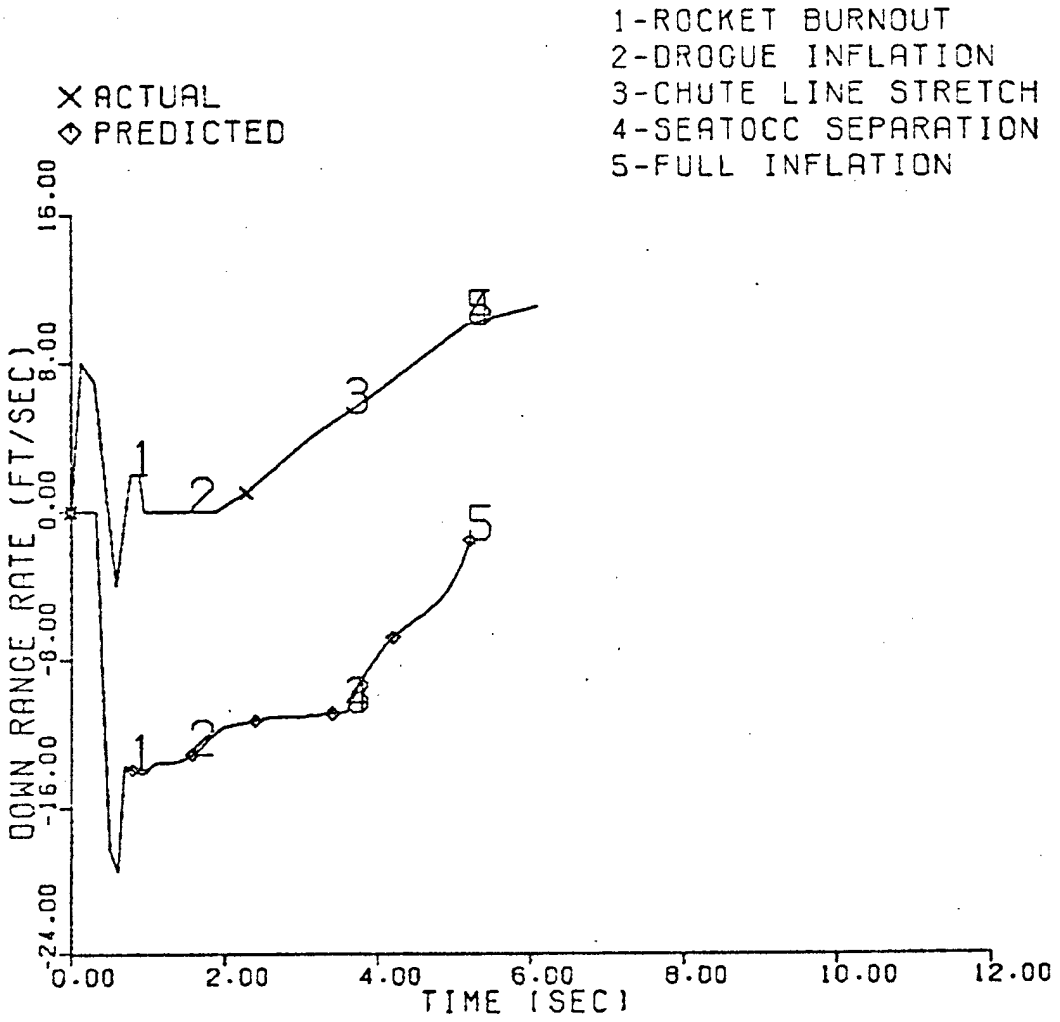


FIGURE G-19

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 3 0 KEAS 3 PERCENTILE DUMMY

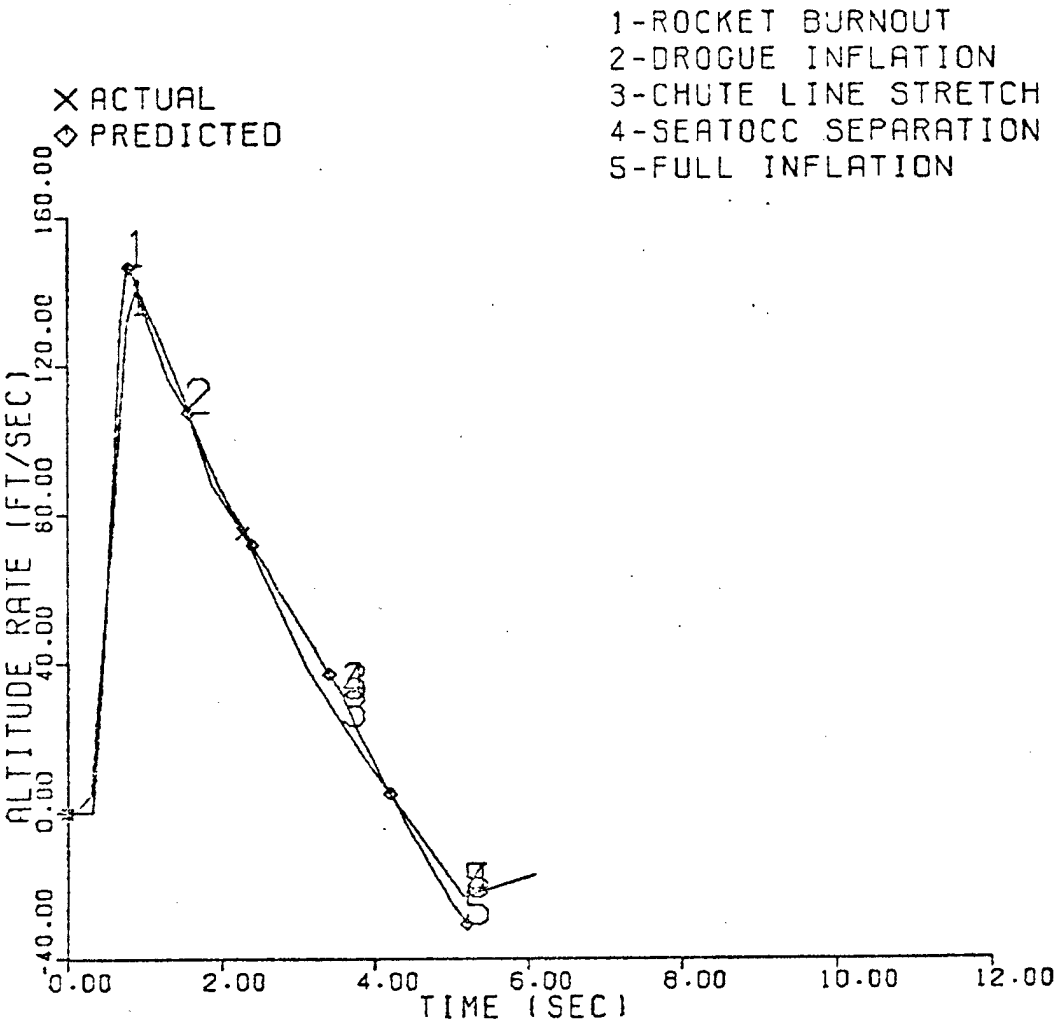


FIGURE G-20

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 3 0 KEAS 3 PERCENTILE DUMMY

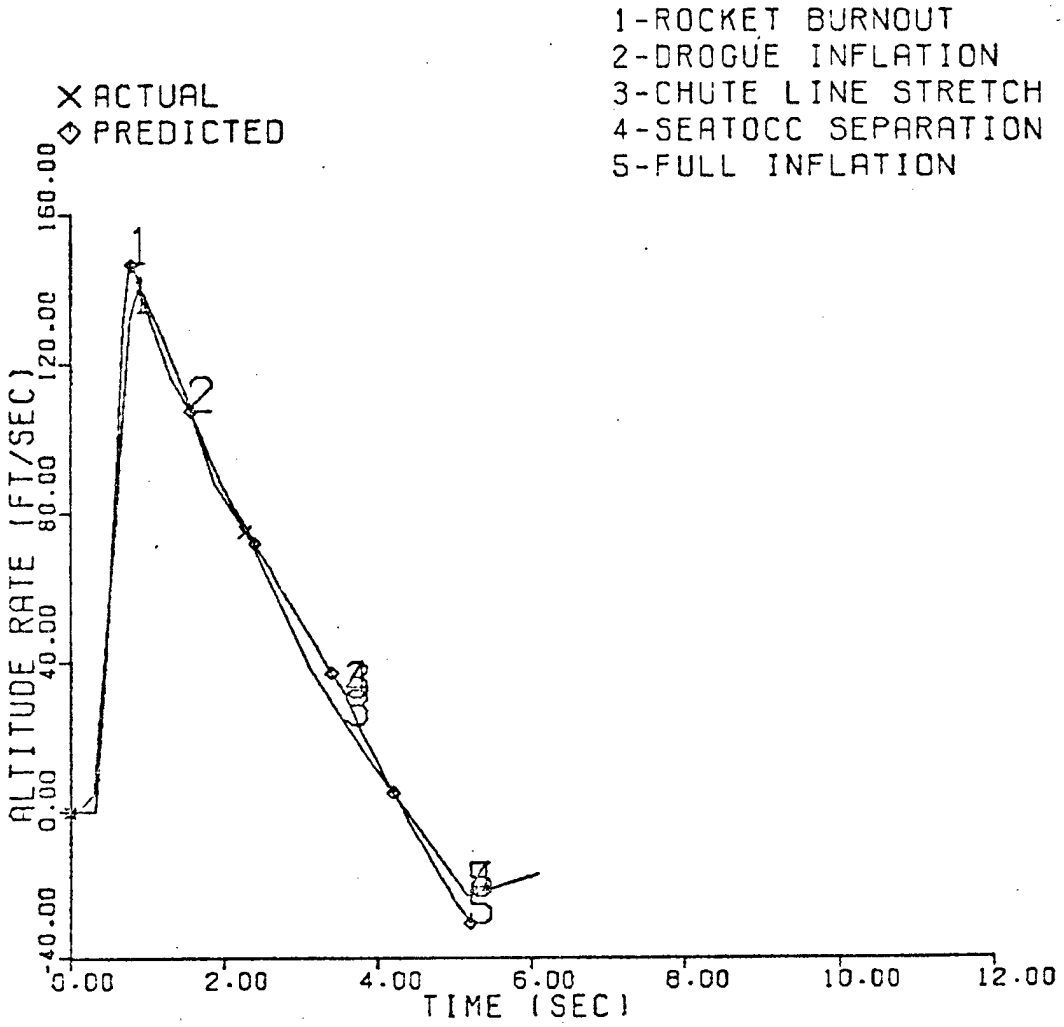


FIGURE G-20

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 3 0 KEAS 3 PERCENTILE DUMMY

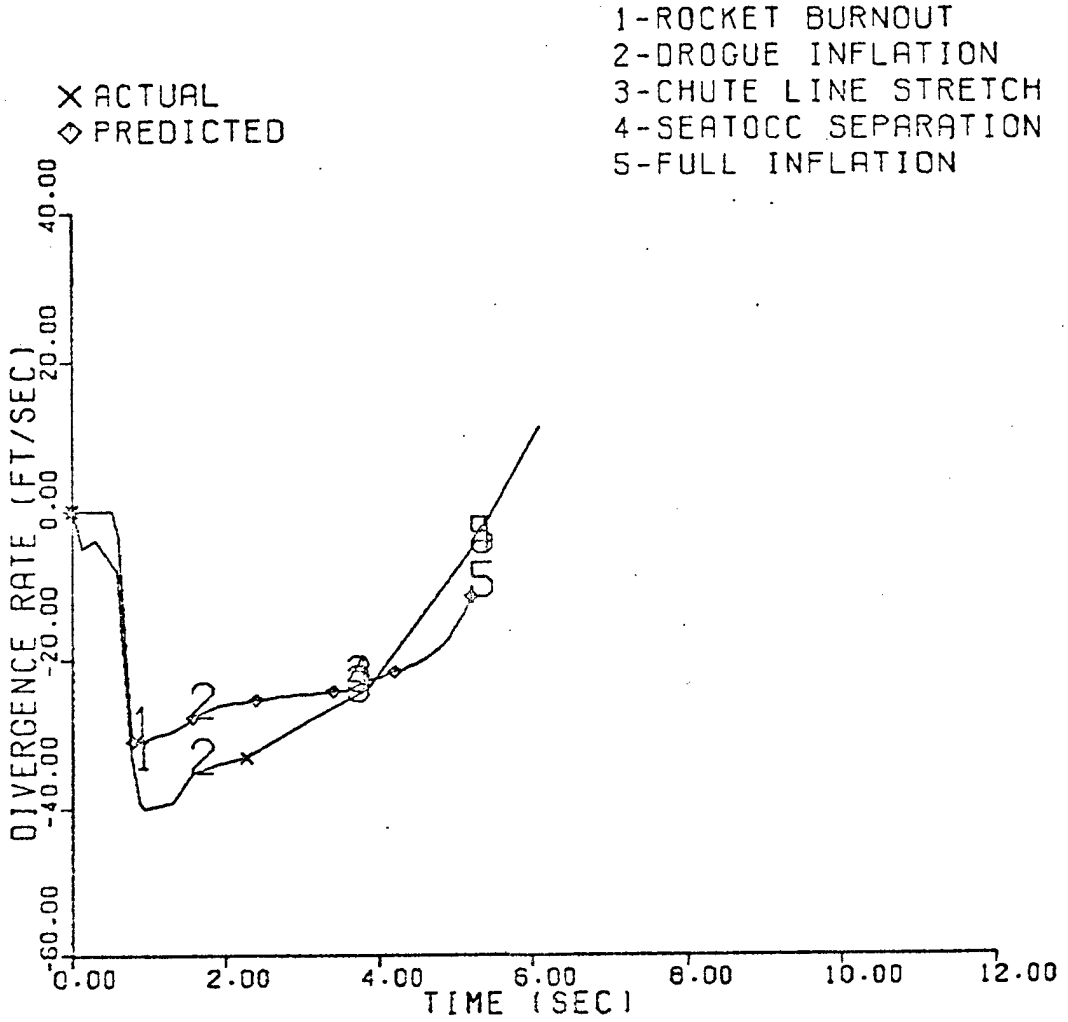


FIGURE G-21

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 4 225 KEAS 3 PERCENTILE DUMMY

◇ PREDICTED

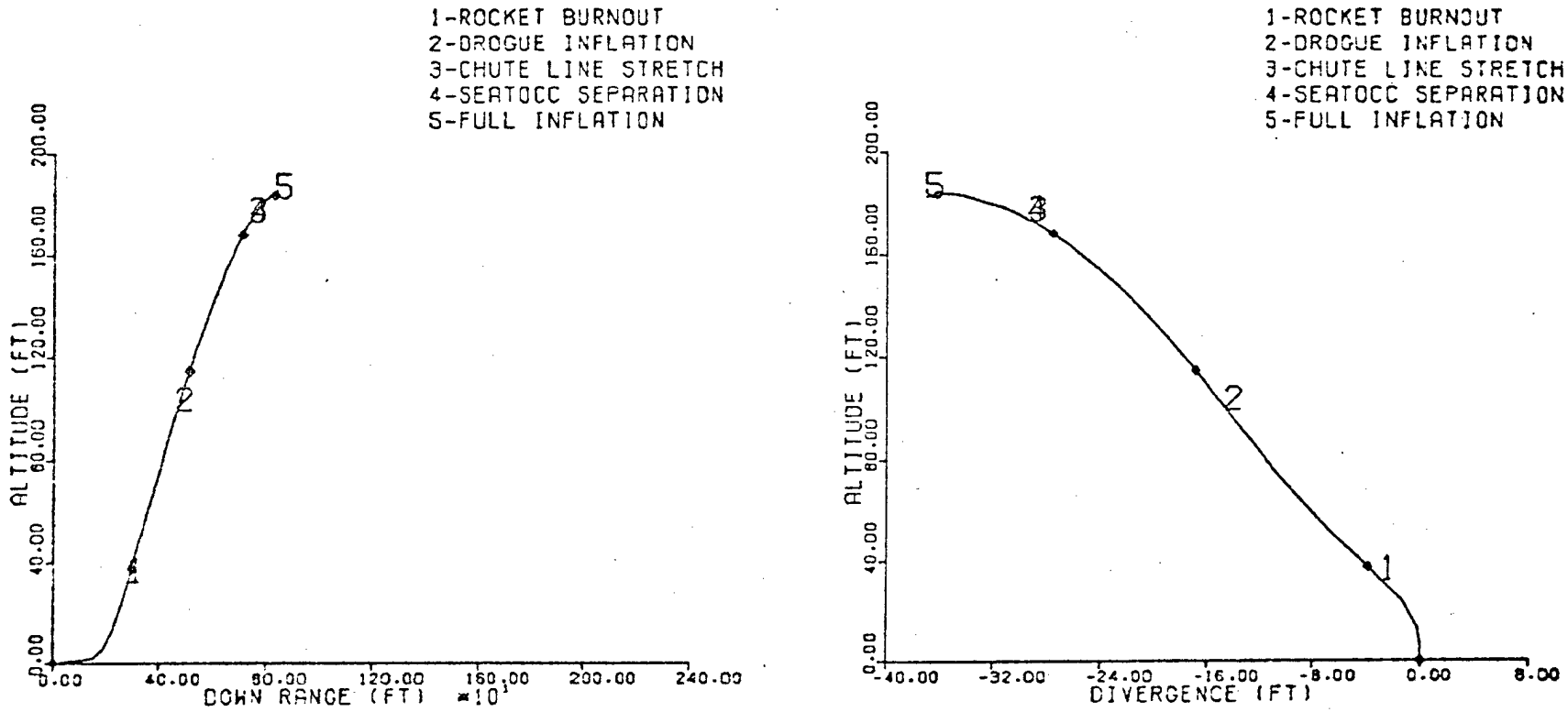


FIGURE G-22

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 4 225 KEAS 3 PERCENTILE DUMMY

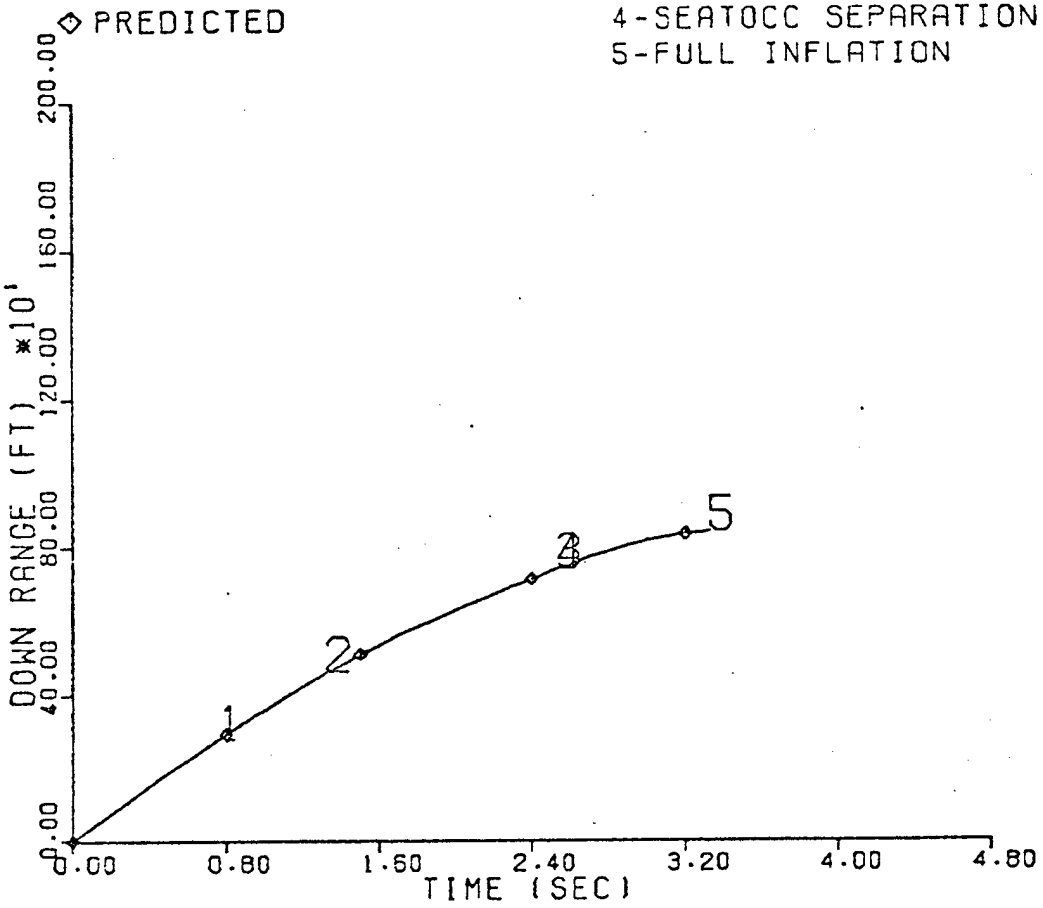


FIGURE G-23

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 4 225 KEAS 3 PERCENTILE DUMMY

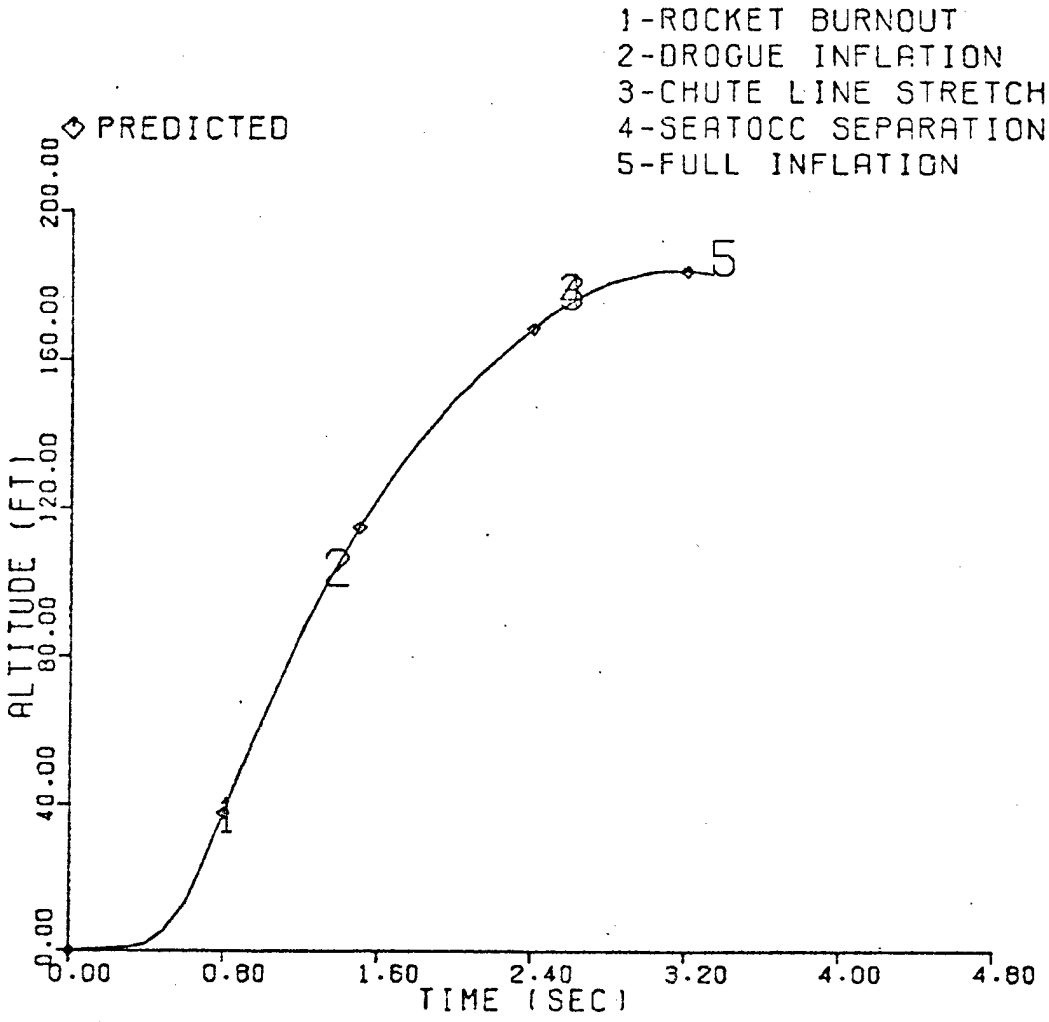


FIGURE G-24

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 4 225 KEAS 3 PERCENTILE DUMMY

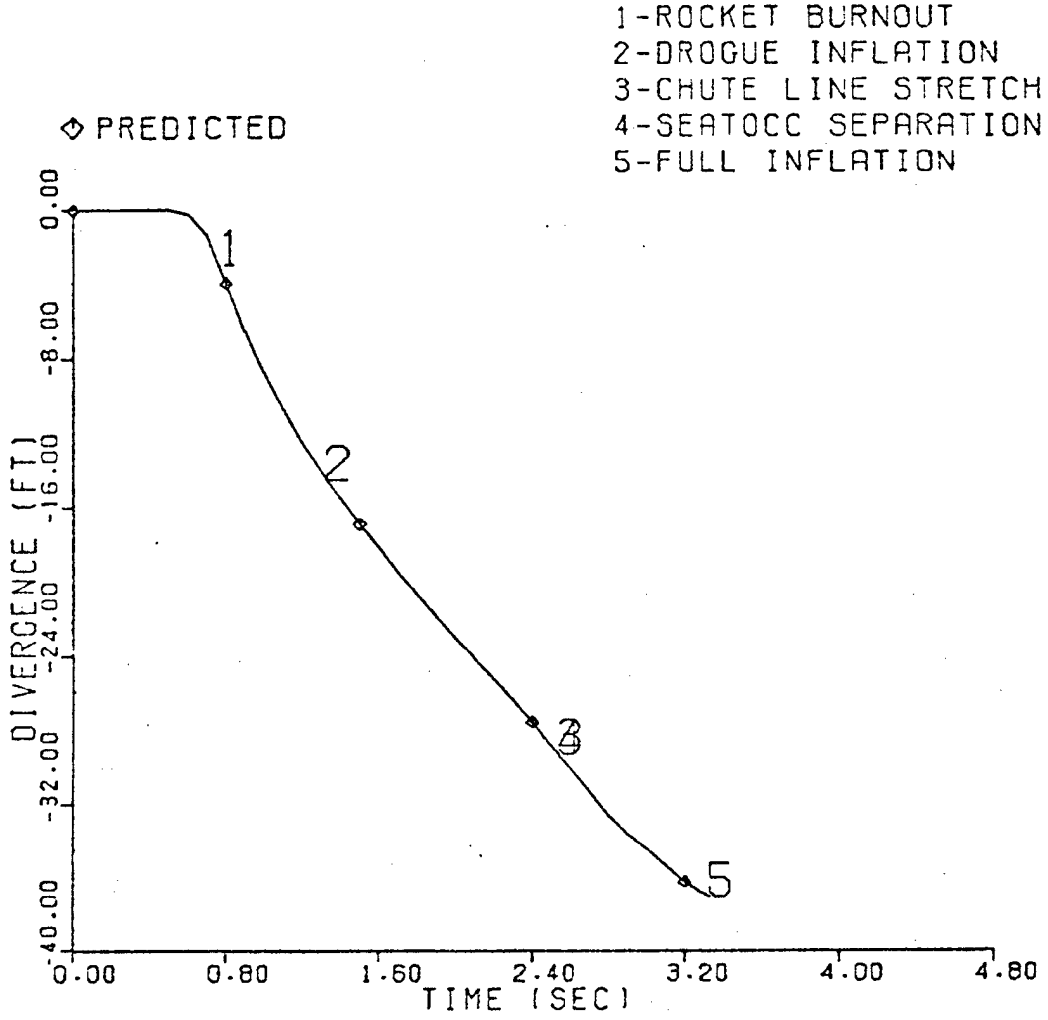


FIGURE G-25

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 4 225 KEAS 3 PERCENTILE DUMMY

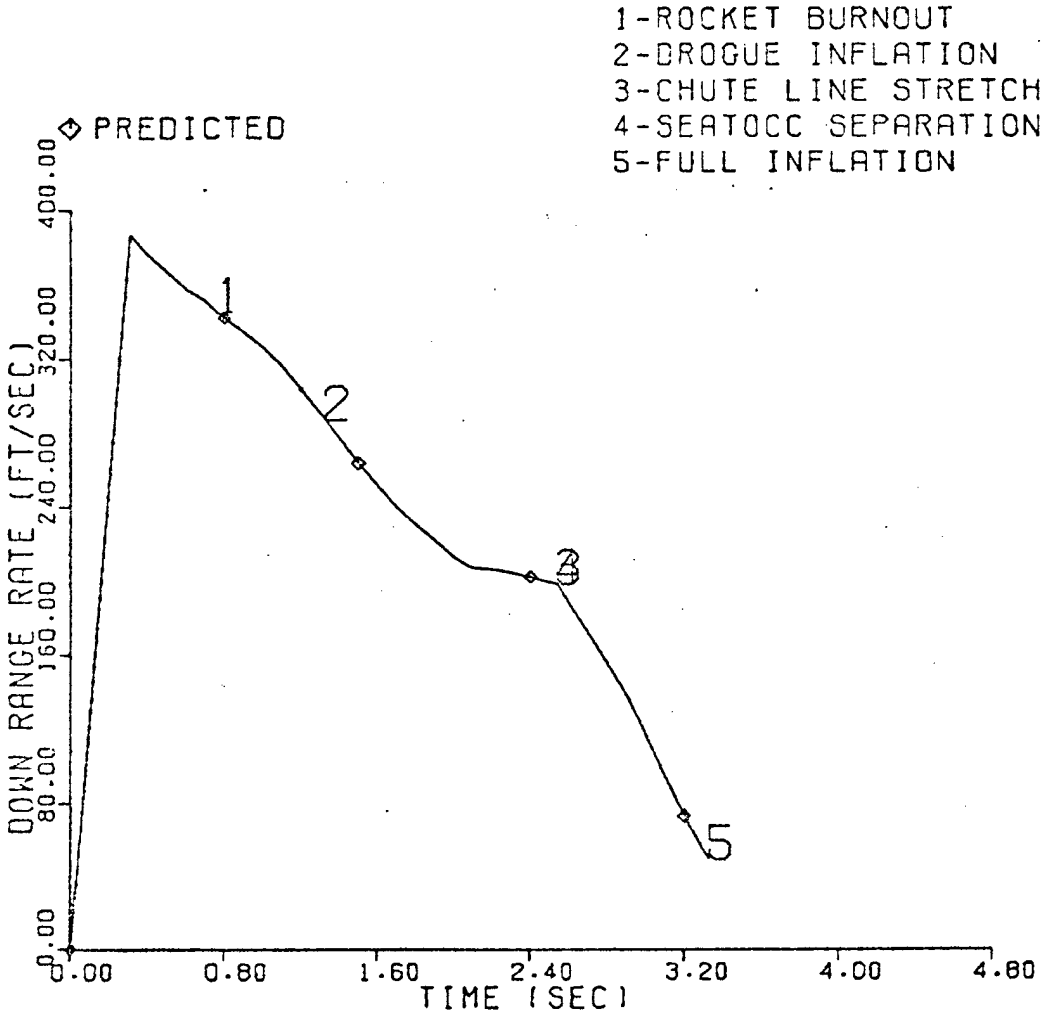


FIGURE G-26

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 4 225 KEAS 3 PERCENTILE DUMMY

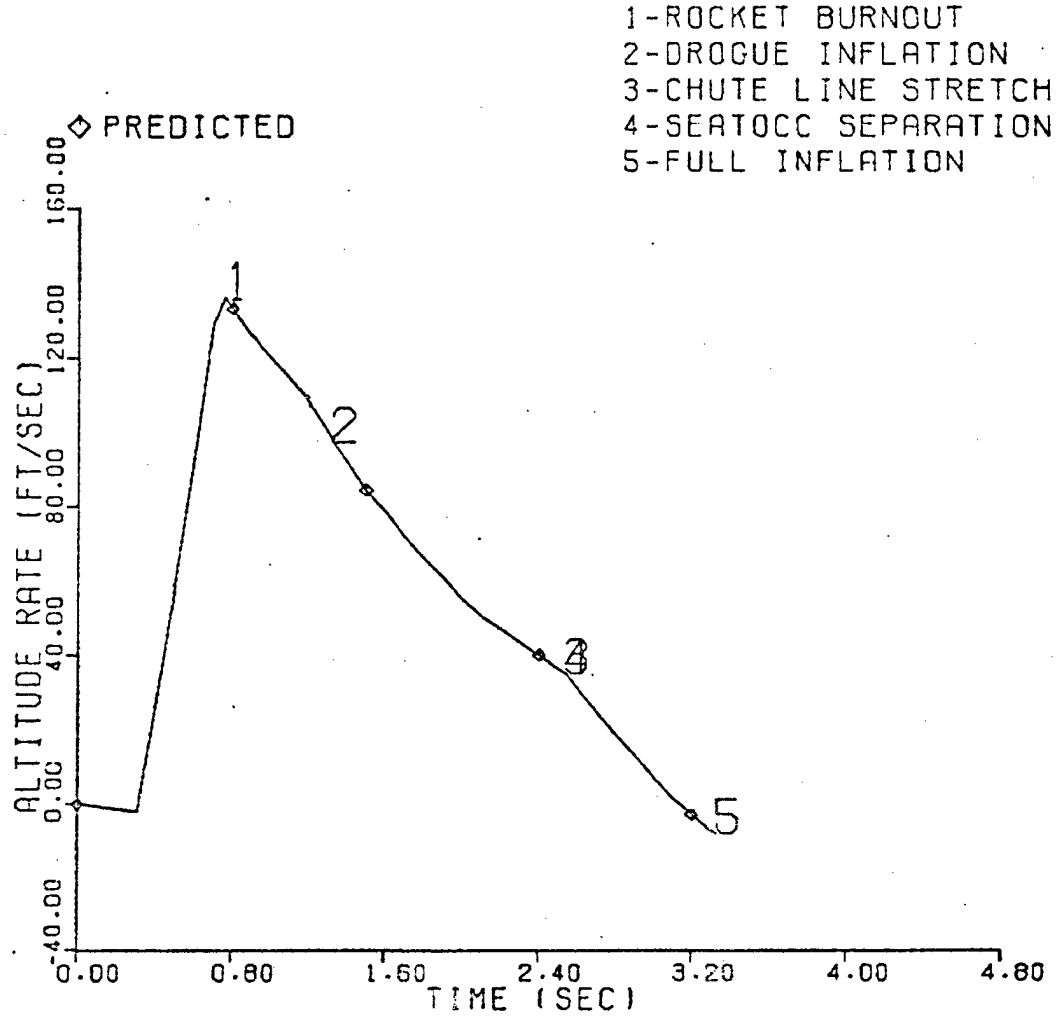


FIGURE G-27

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 4 225 KEAS 3 PERCENTILE DUMMY

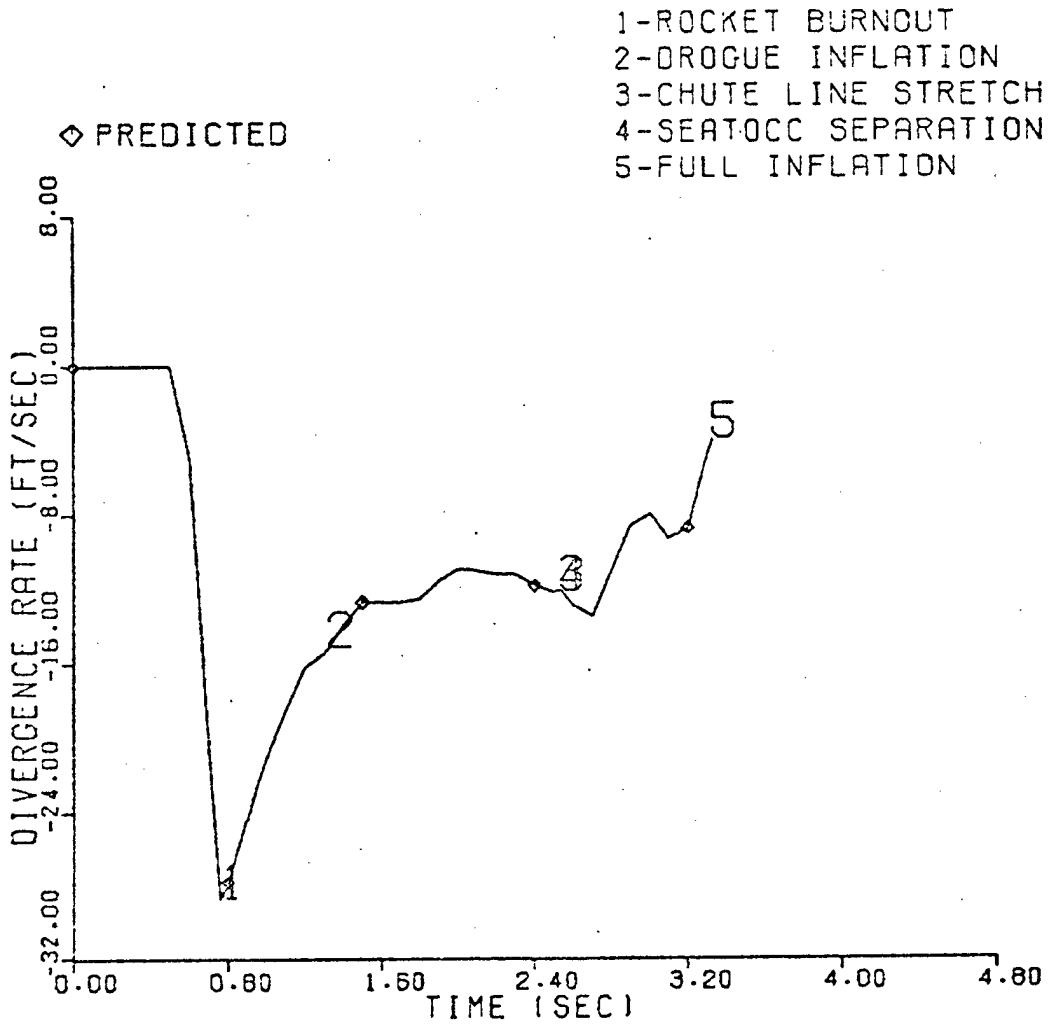
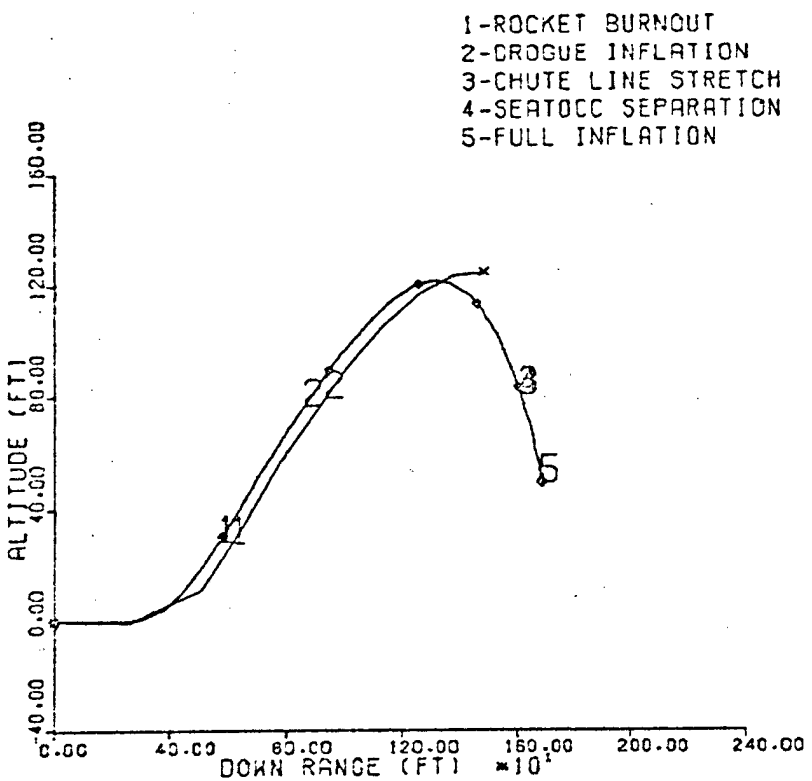


FIGURE G-28

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 5 435 KEAS 3 PERCENTILE DUMMY

× ACTUAL
◇ PREDICTED



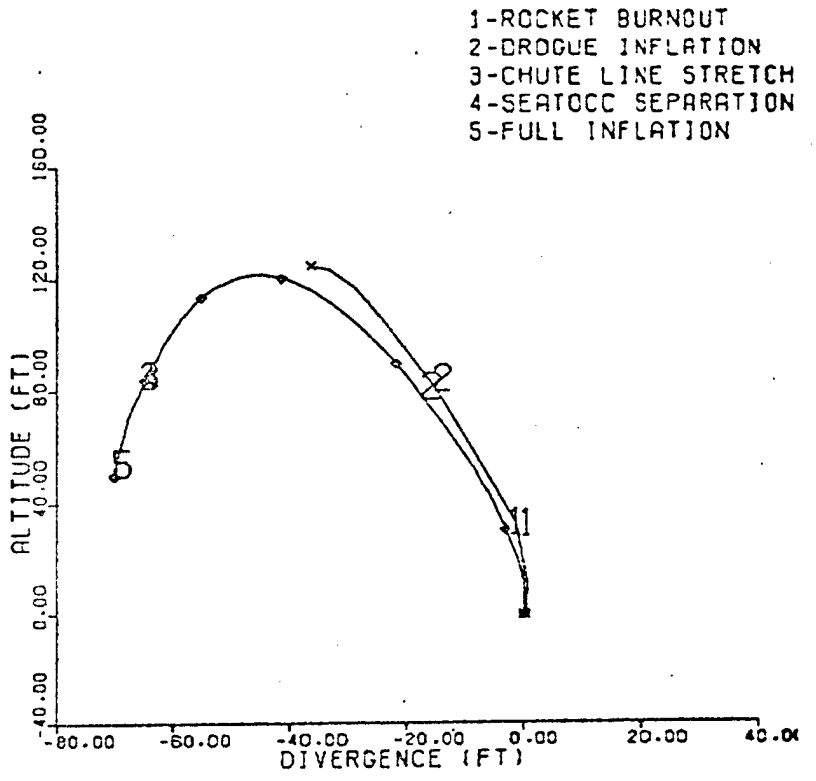


FIGURE G-29

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 5 435 KEAS 3 PERCENTILE DUMMY

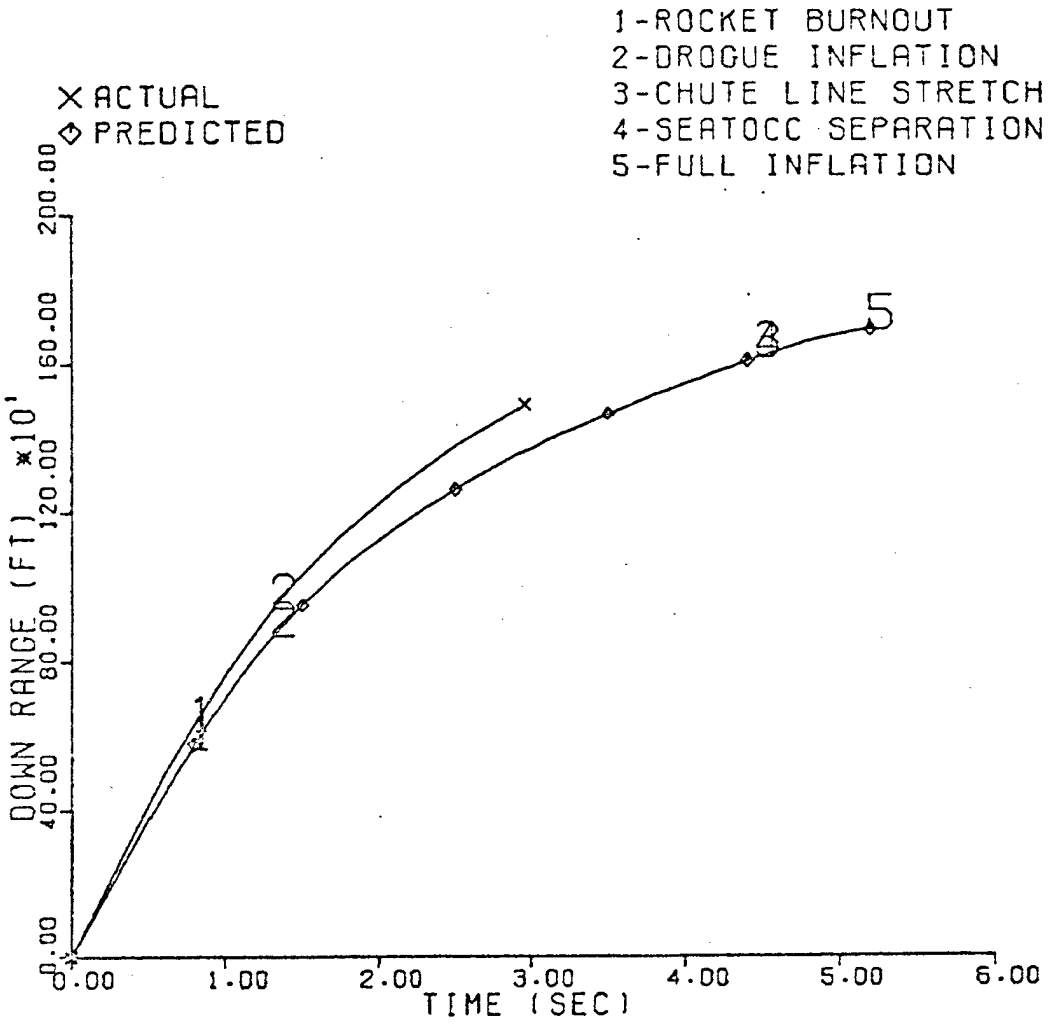


FIGURE G-30

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 5 435 KEAS 3 PERCENTILE DUMMY

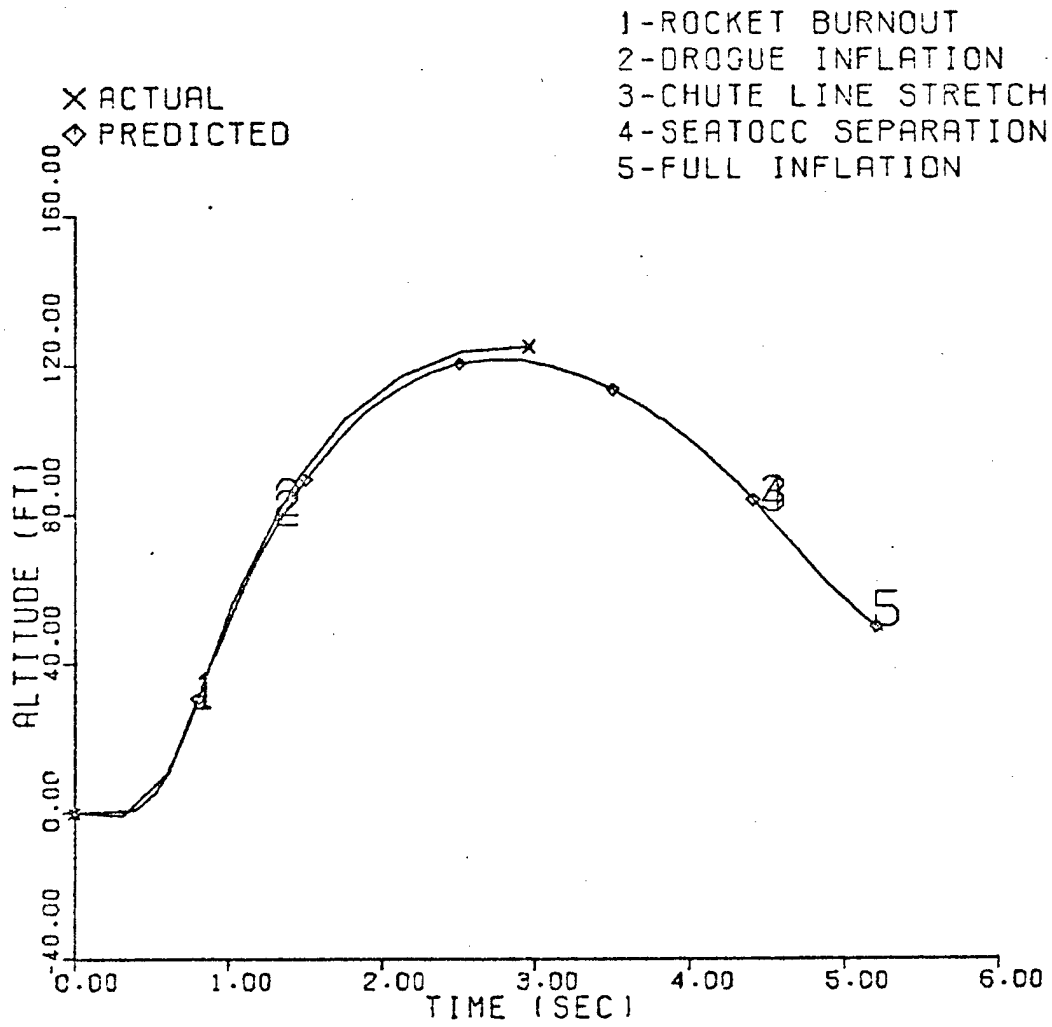


FIGURE G-31

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 5 435 KEAS 3 PERCENTILE DUMMY

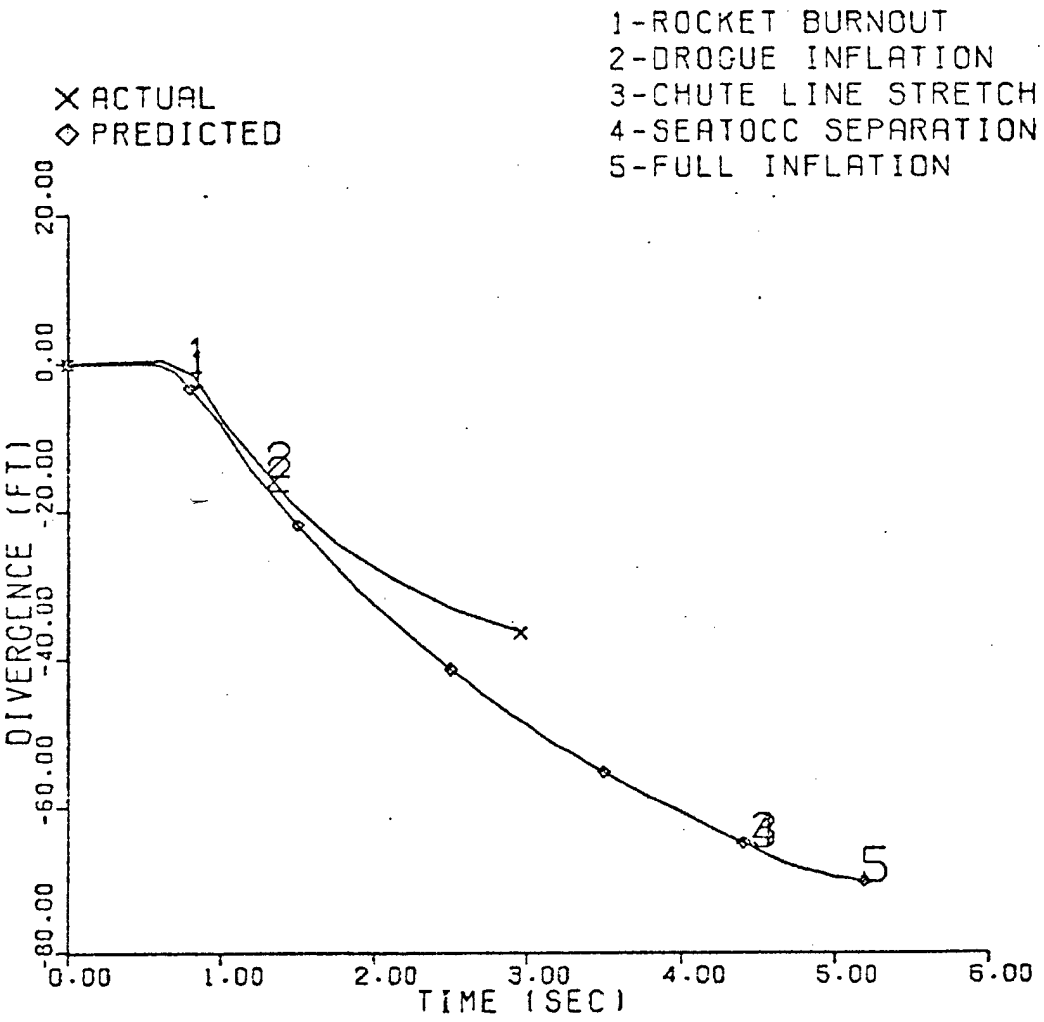


FIGURE G-32

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 5 435 KEAS 3 PERCENTILE DUMMY

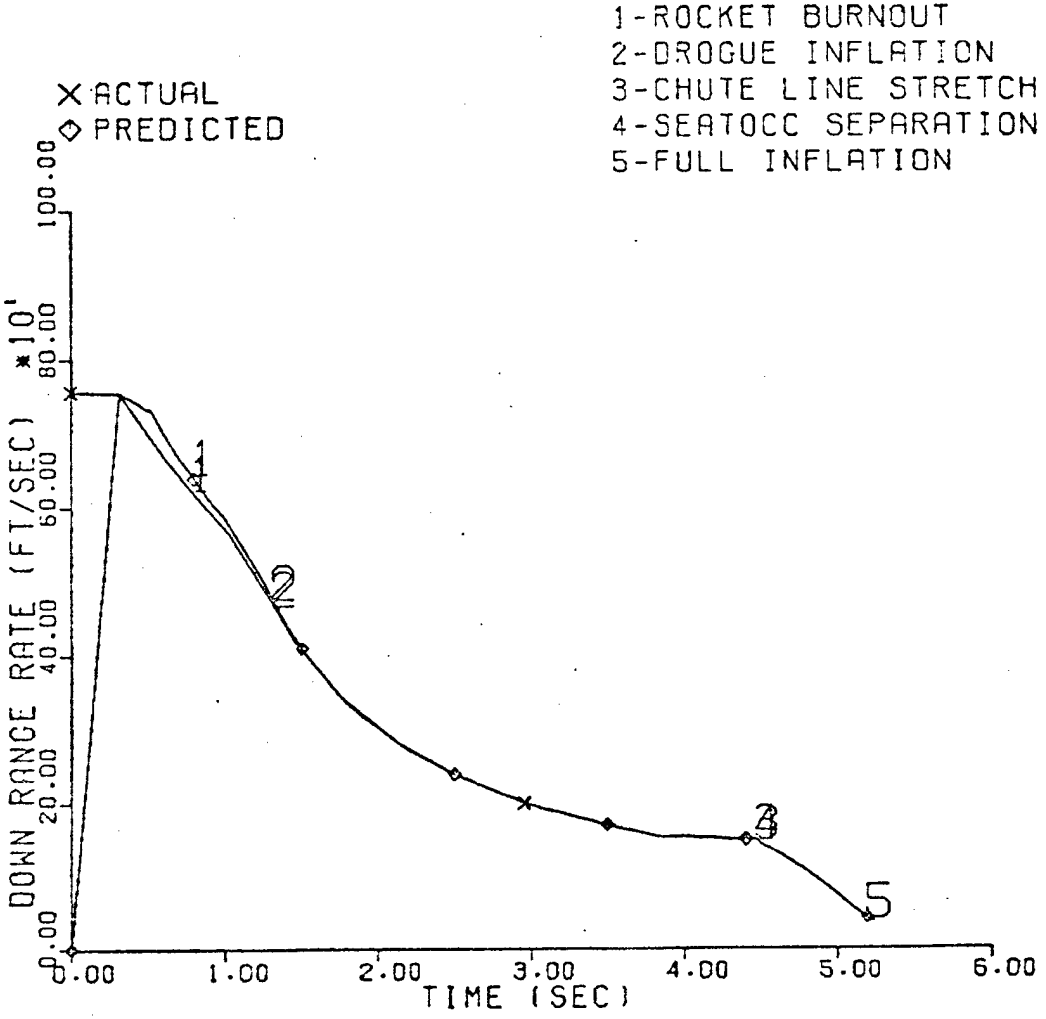


FIGURE G-33

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 5 435 KEAS 3 PERCENTILE DUMMY

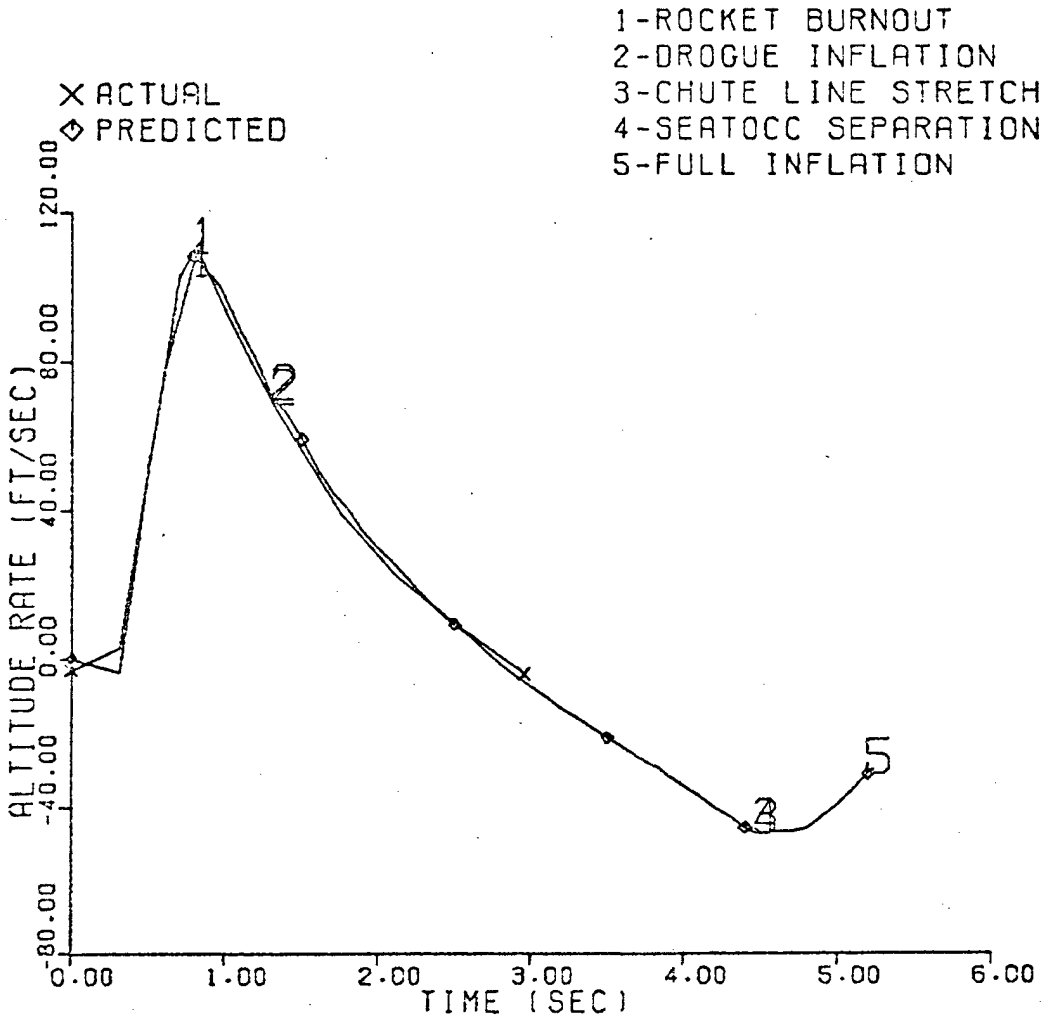


FIGURE G-34

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 5 435 KEAS 3 PERCENTILE DUMMY

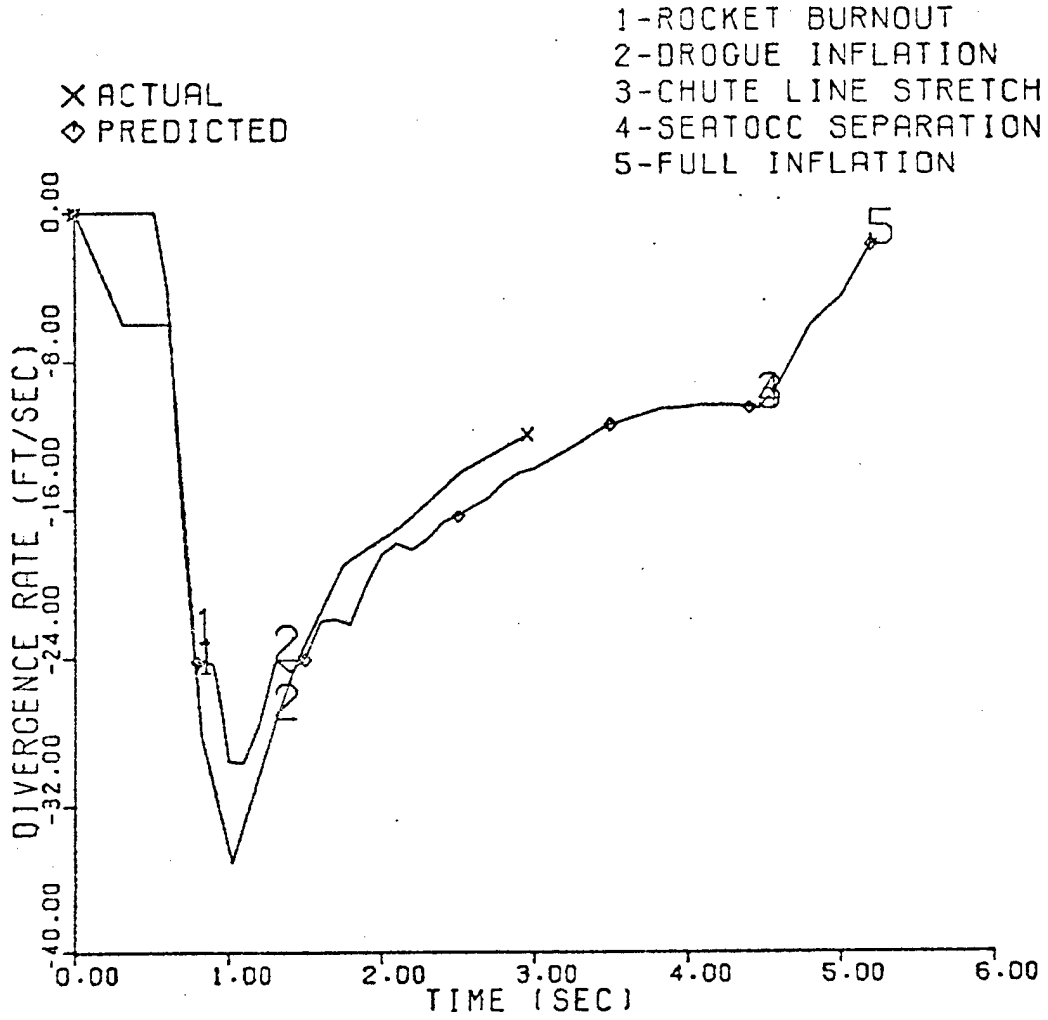
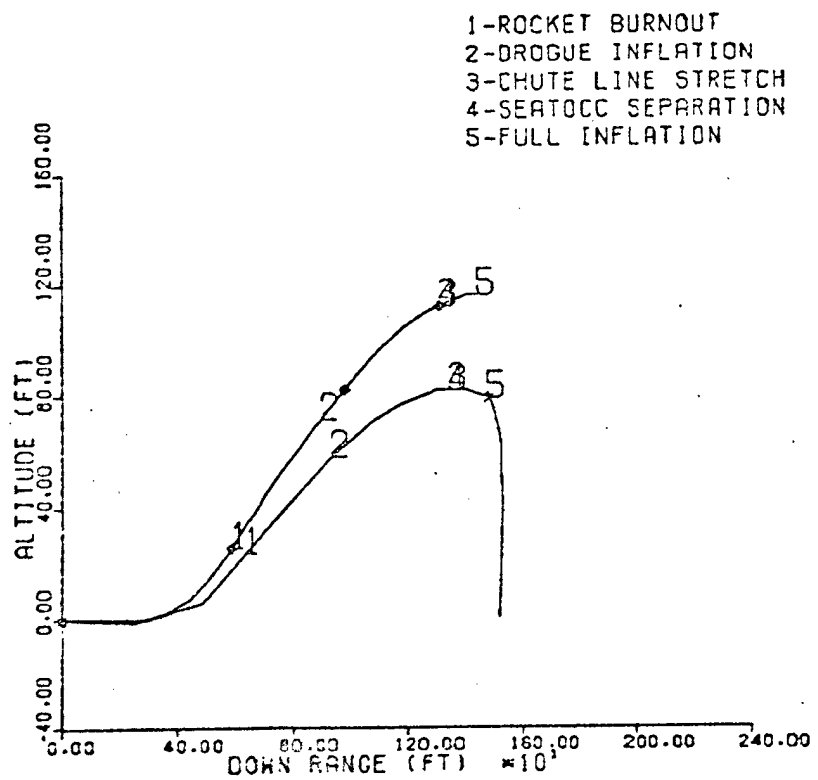


FIGURE G-35

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 6 435 KEAS 98 PERCENTILE DUMMY

X ACTUAL
◇ PREDICTED



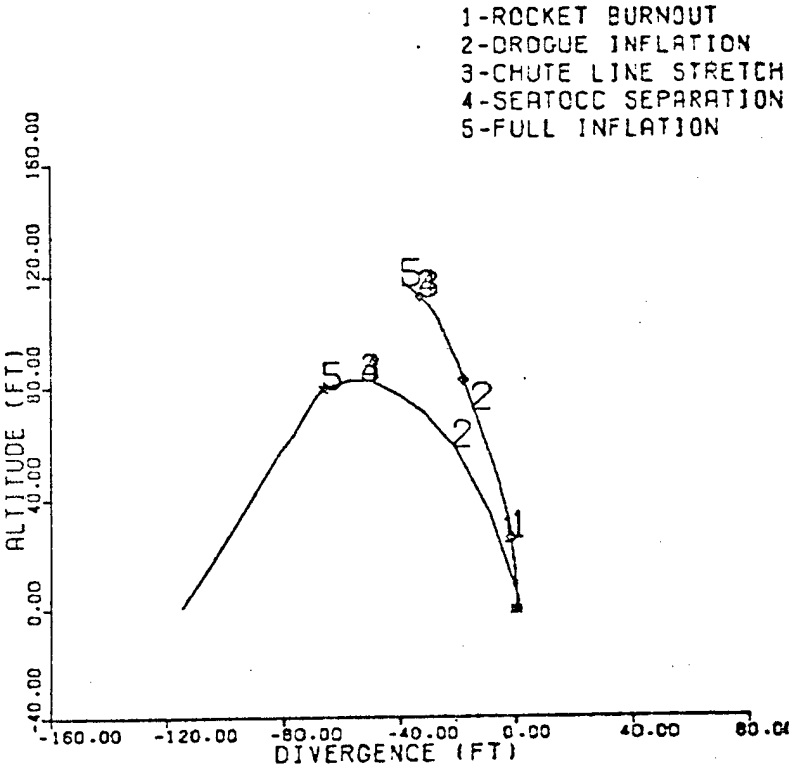


FIGURE G-36

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNCRT TEST DATA
TEST 6 435 KEAS 98 PERCENTILE DUMMY

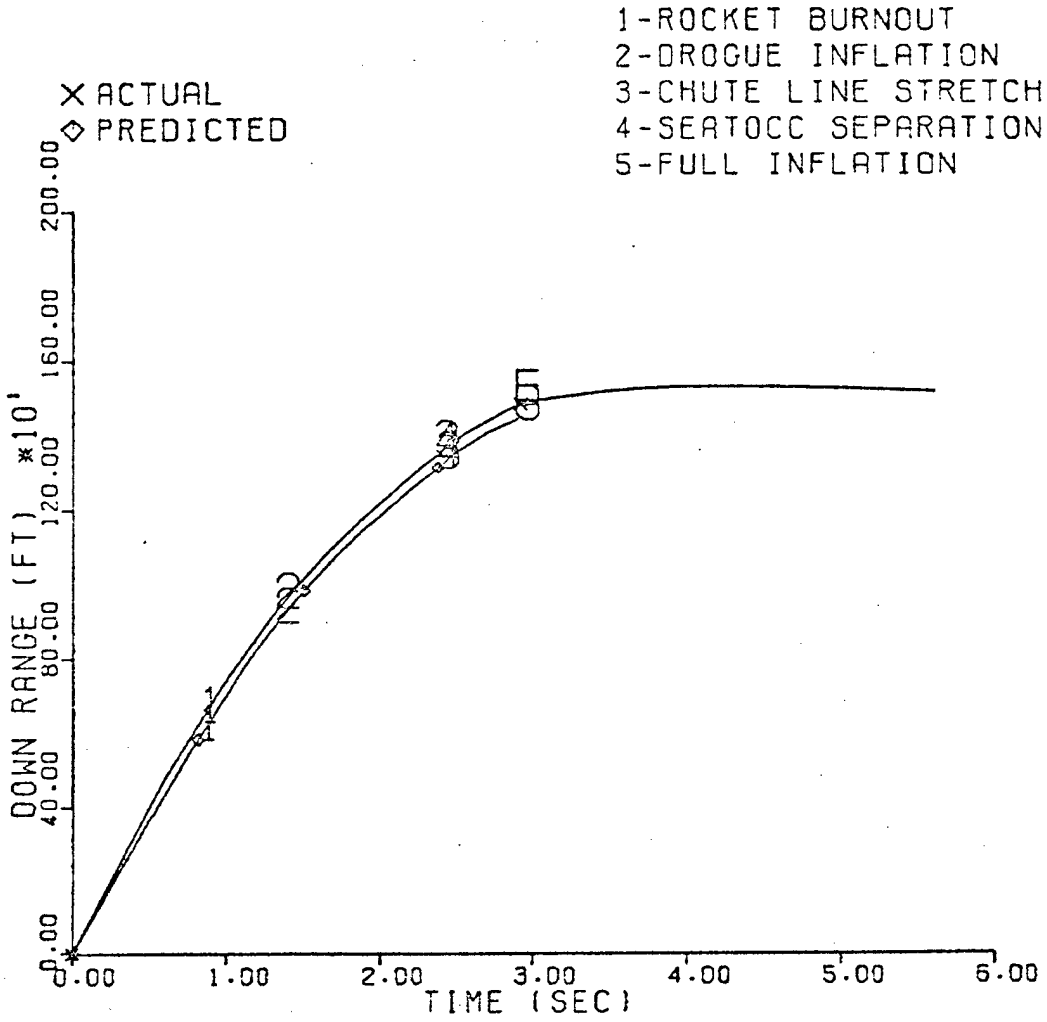


FIGURE G-37

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 6 435 KEAS 98 PERCENTILE DUMMY

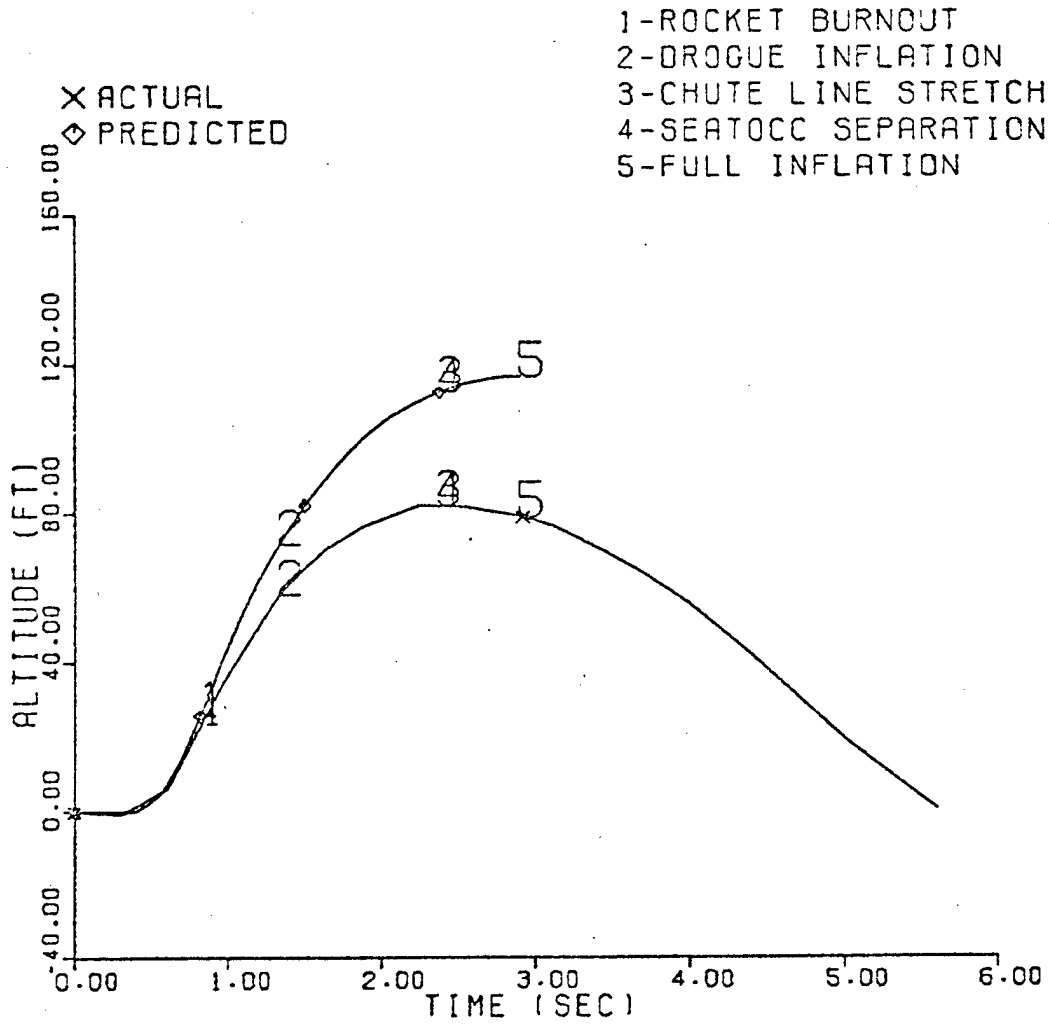


FIGURE G-38

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 6 435 KEAS 98 PERCENTILE DUMMY

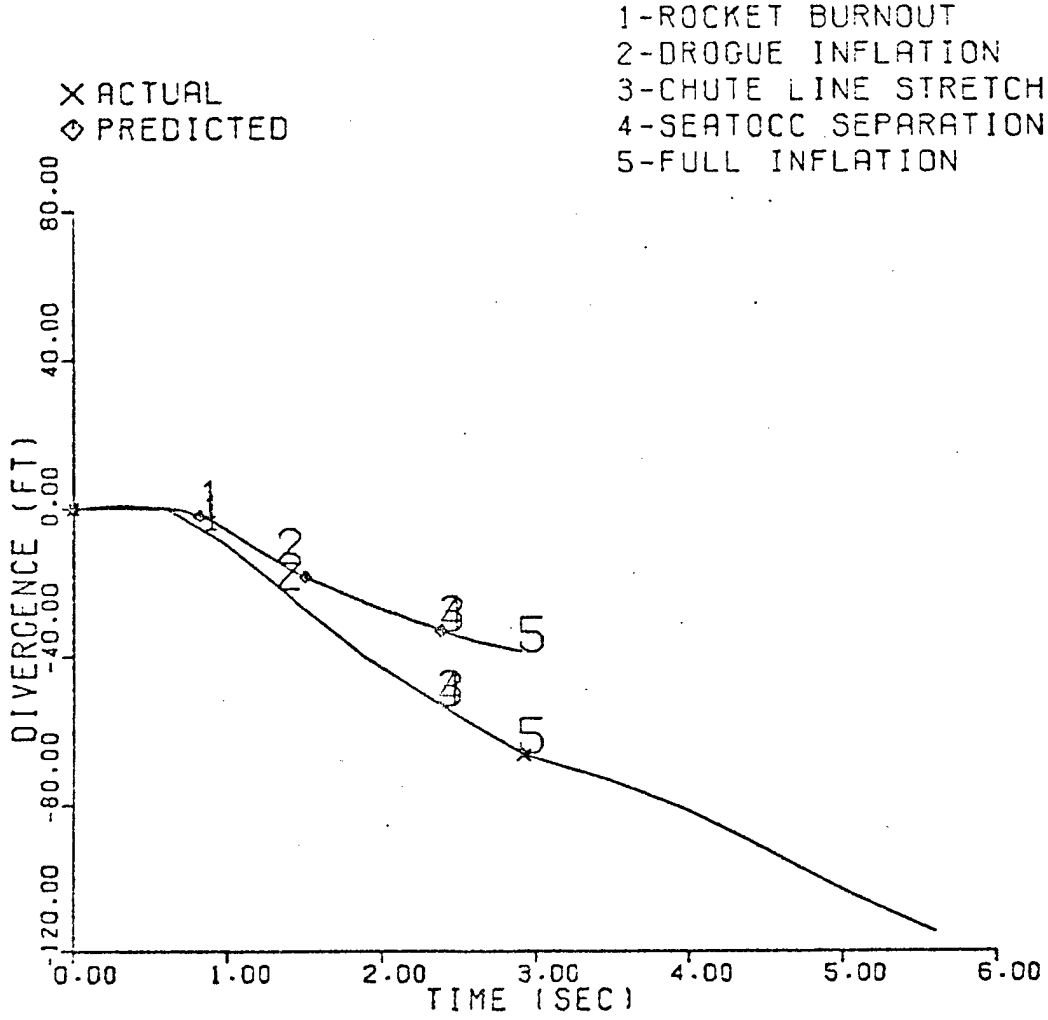


FIGURE G-39

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 6 435 KEAS 98 PERCENTILE DUMMY

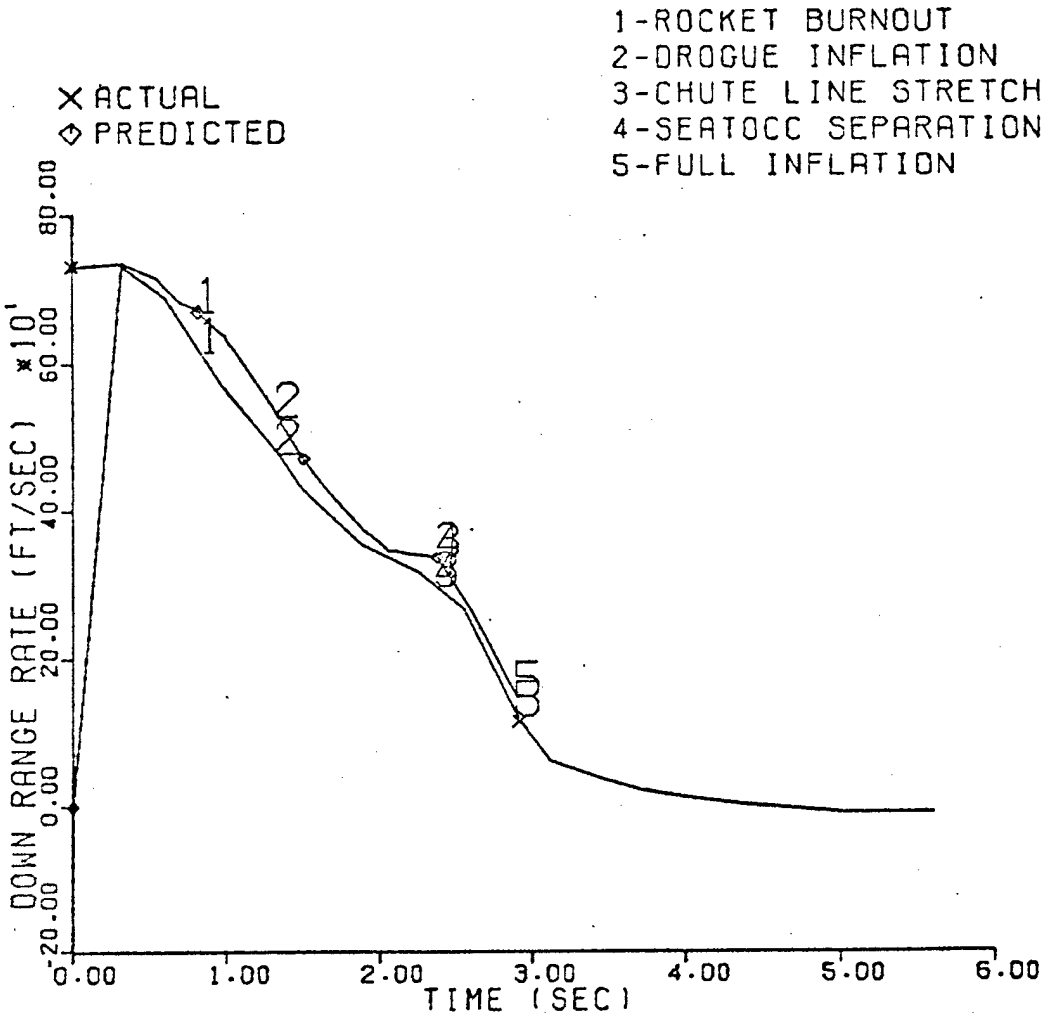


FIGURE G-40

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 6 435 KEAS 98 PERCENTILE DUMMY

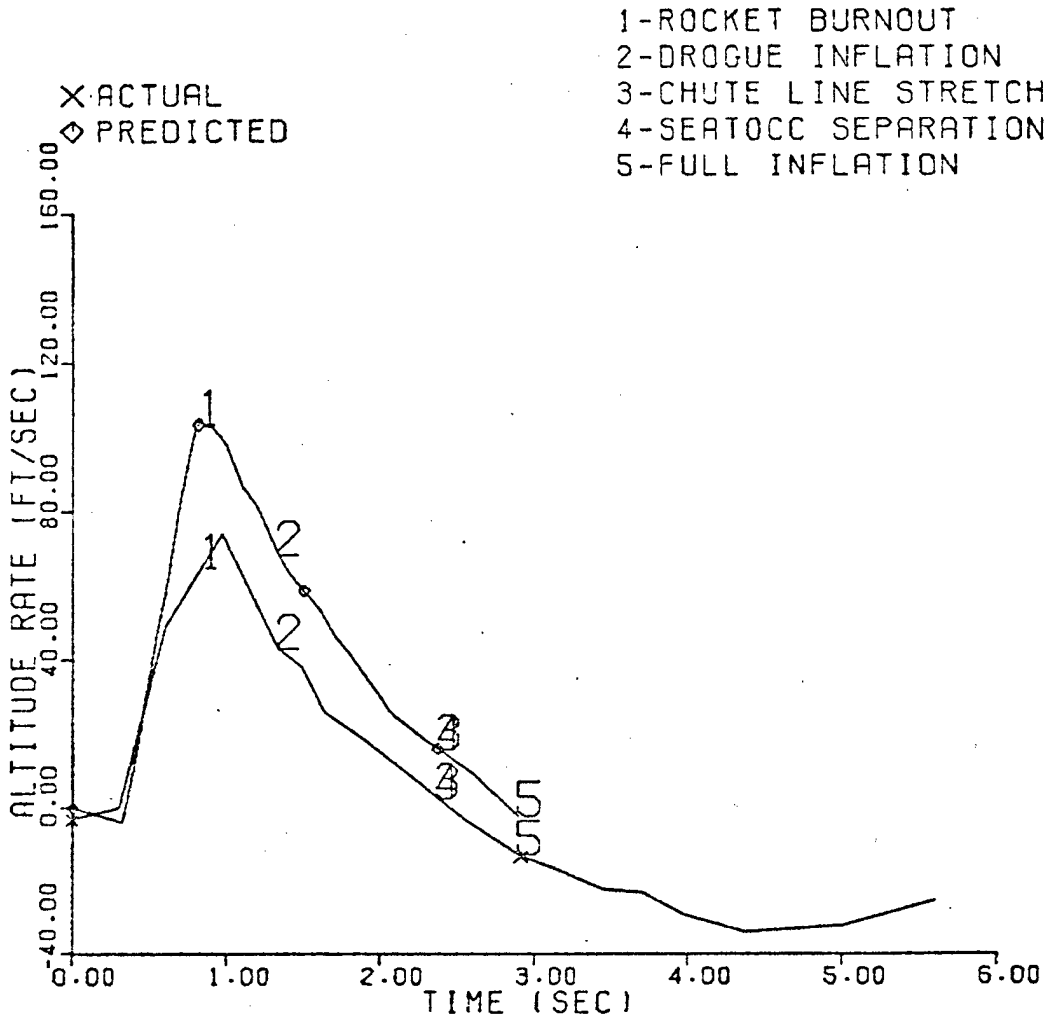


FIGURE G-41

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 6 435 KEAS 98 PERCENTILE DUMMY

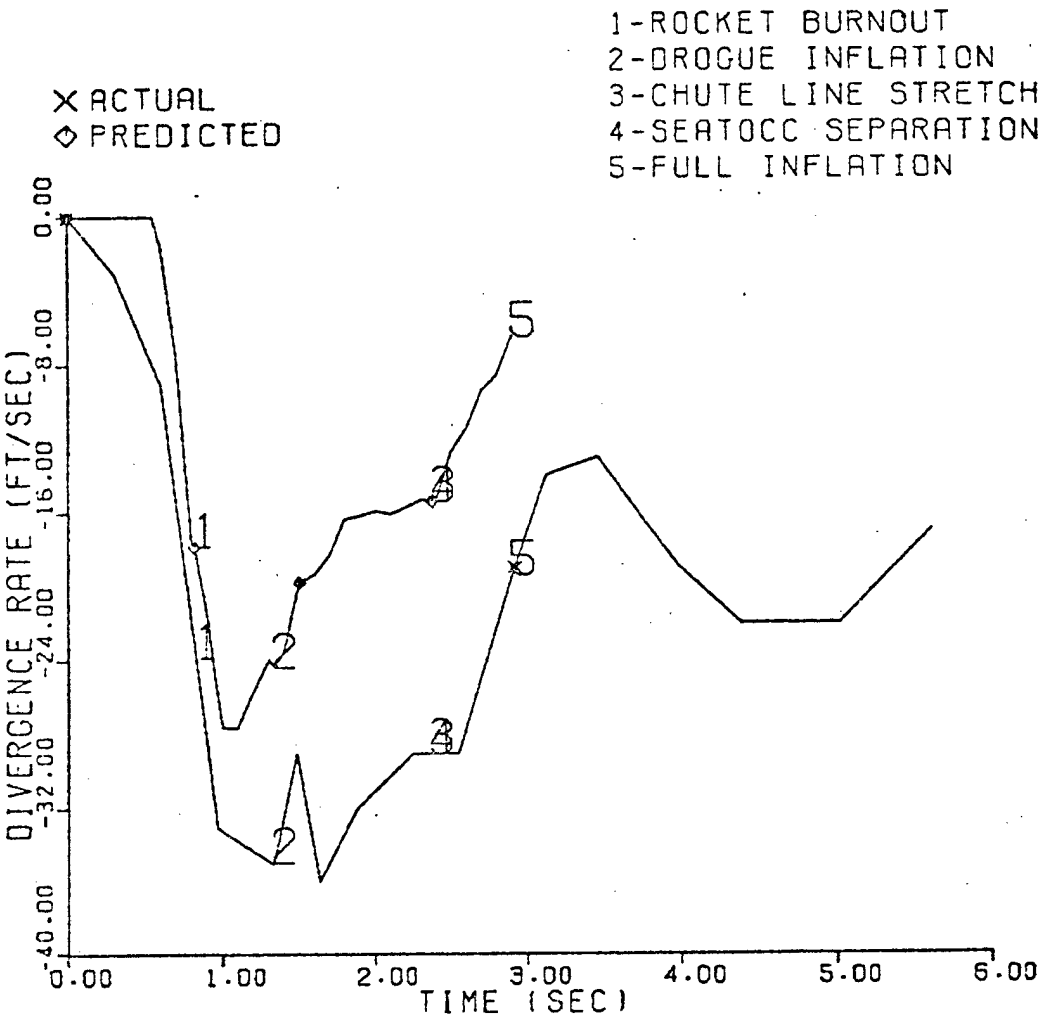


FIGURE G-42

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 7 600 KEAS 3 PERCENTILE DUMMY

X ACTUAL
◇ PREDICTED

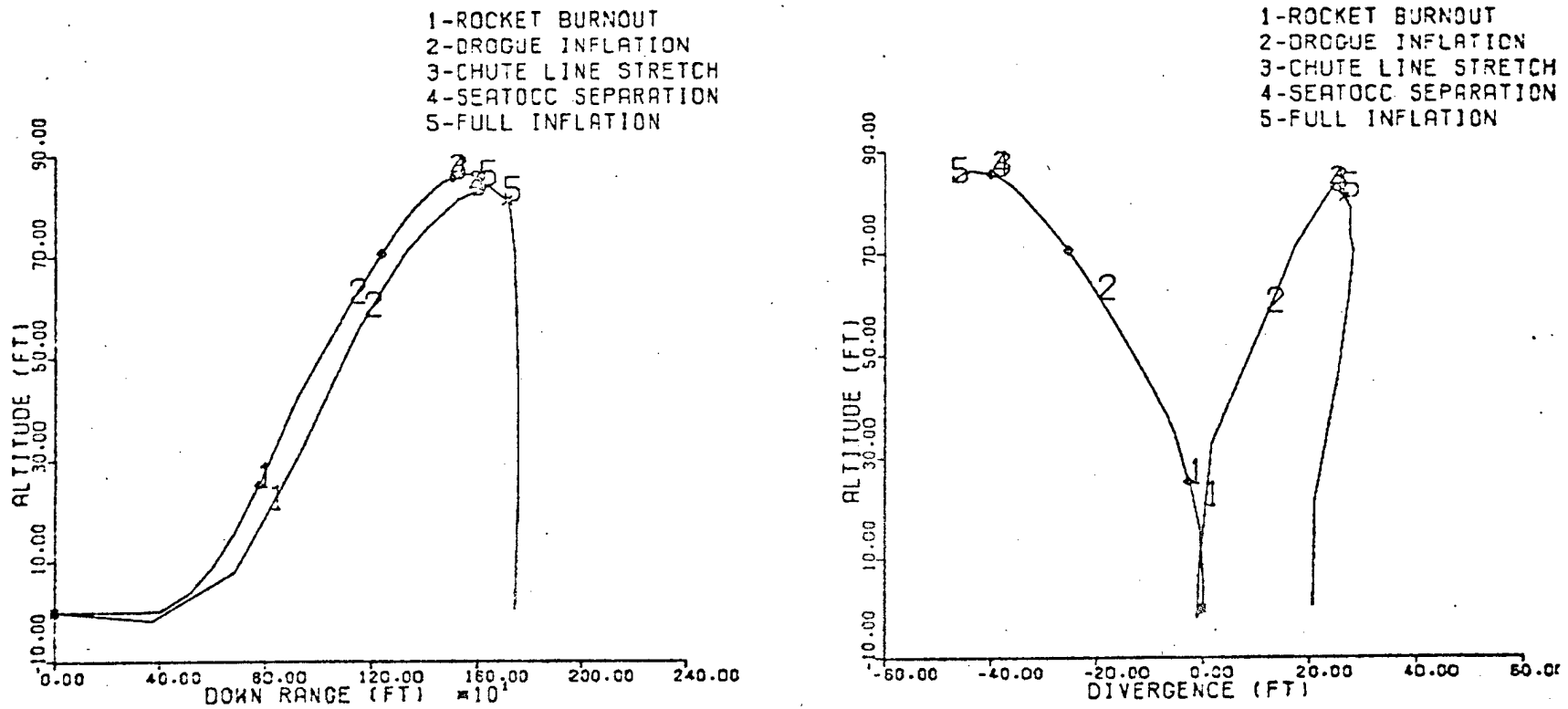


FIGURE G-43

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 7 600 KEAS 3 PERCENTILE DUMMY

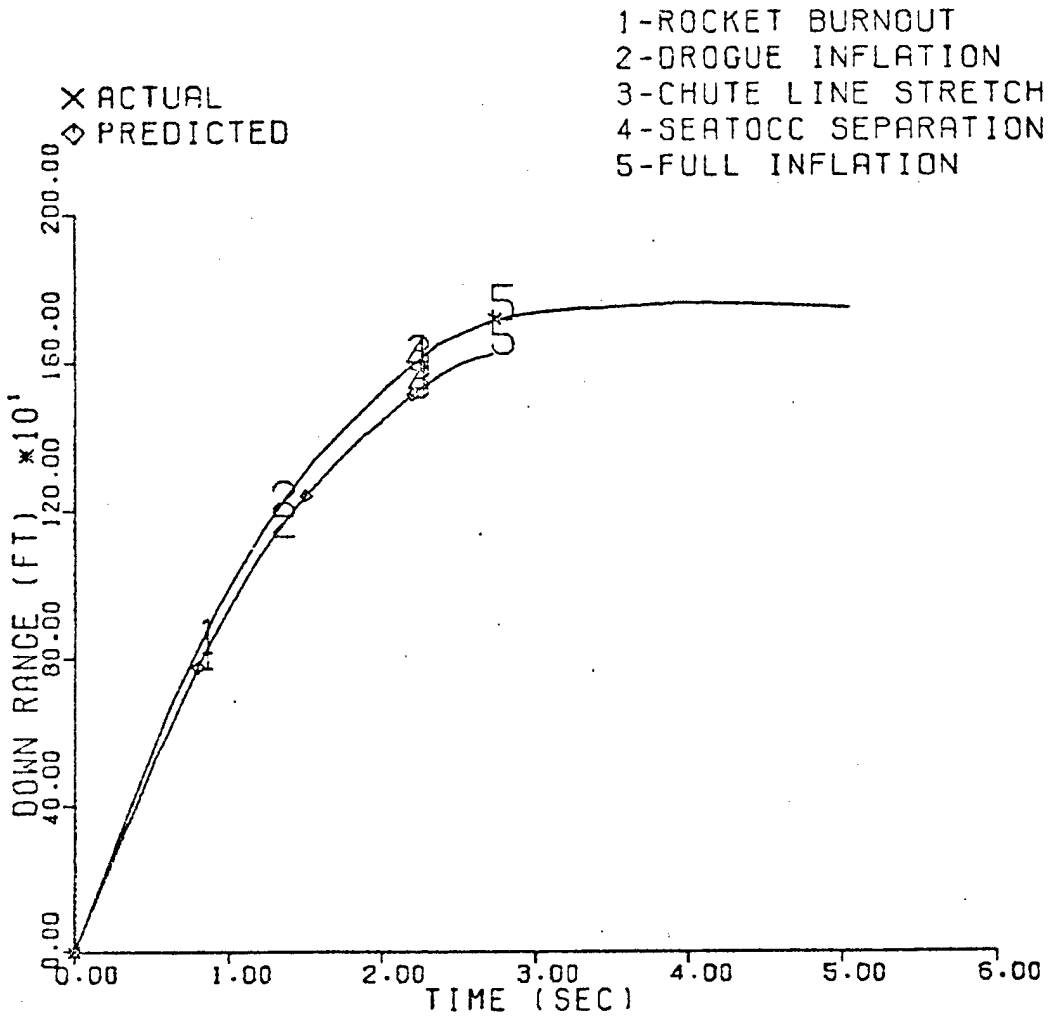


FIGURE G-44

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 7 600 KEAS 3 PERCENTILE DUMMY

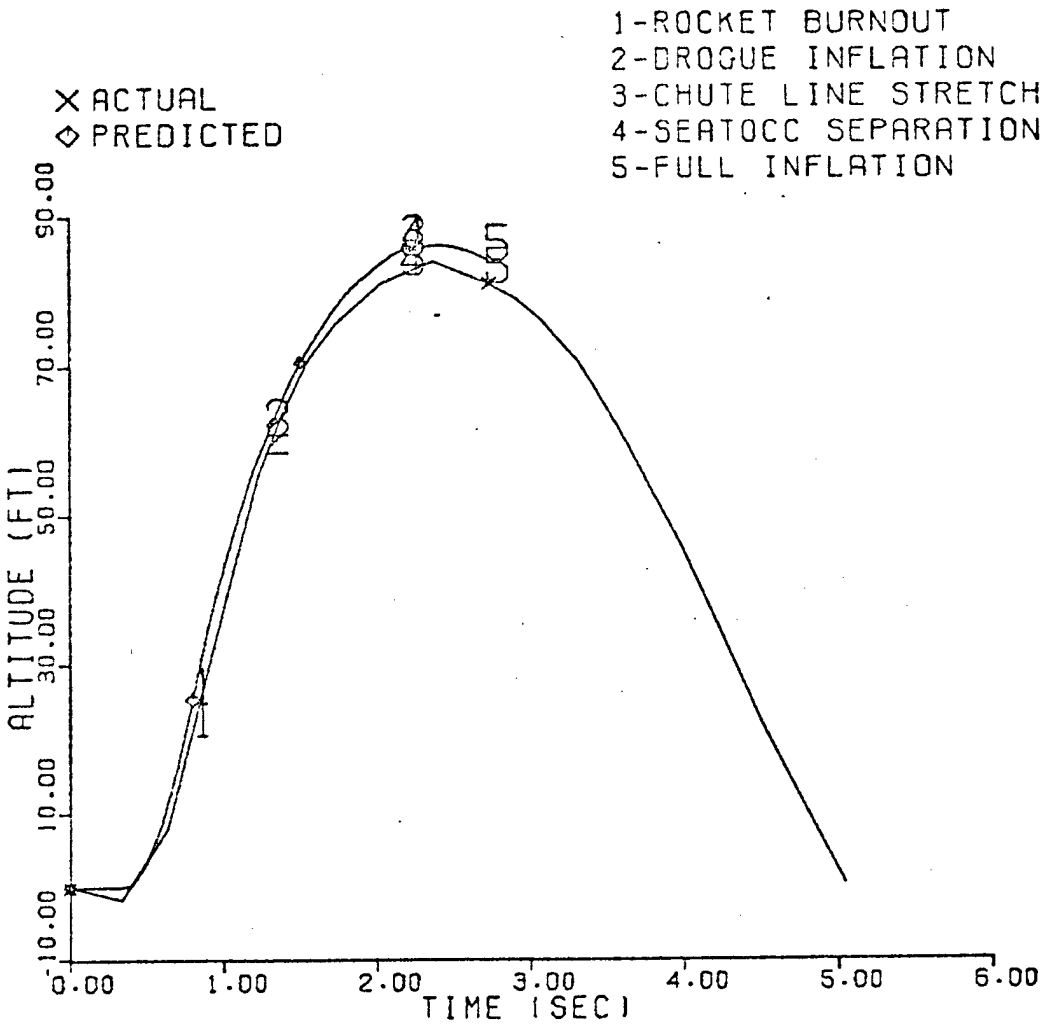


FIGURE G-45

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 7 600 KEAS 3 PERCENTILE DUMMY

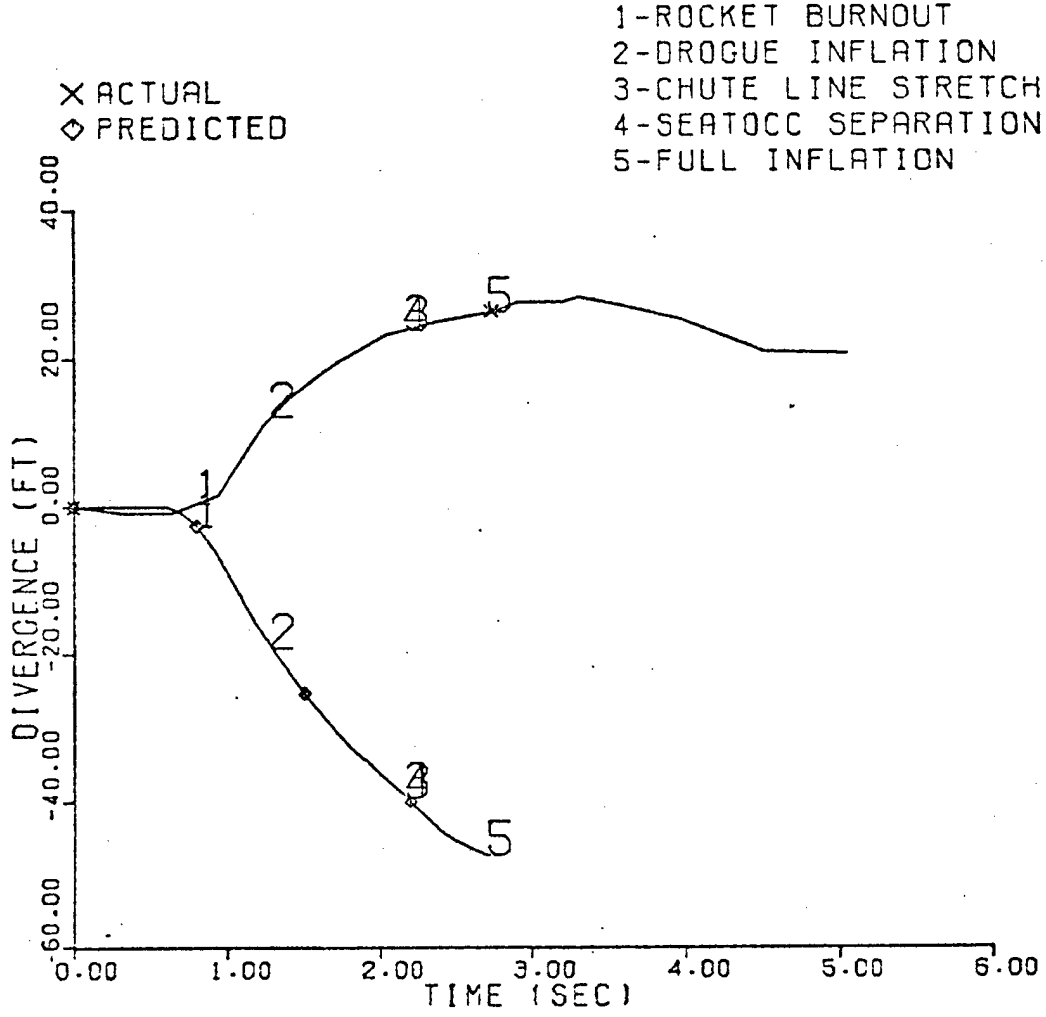


FIGURE G-46

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 7 600 KEAS 3 PERCENTILE DUMMY

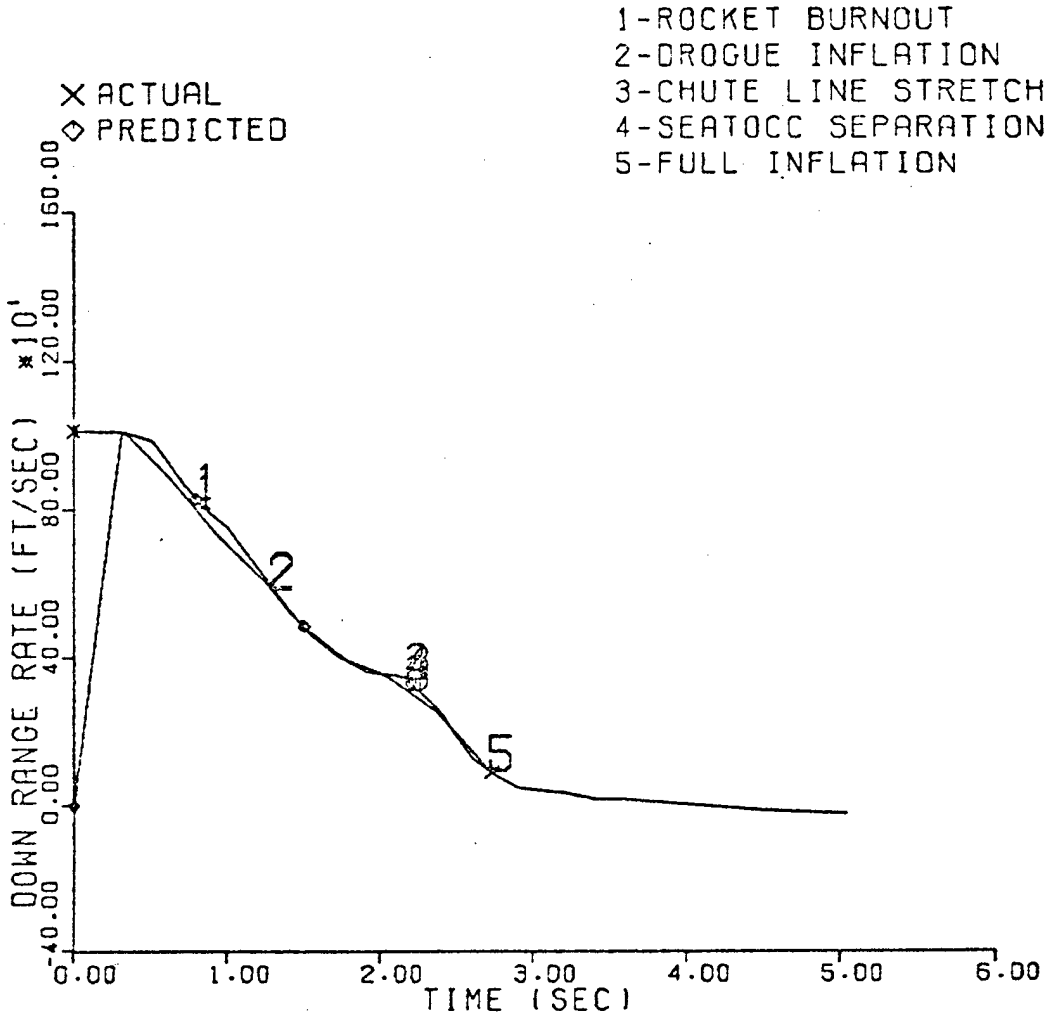


FIGURE G-47

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 7 600 KEAS 3 PERCENTILE DUMMY

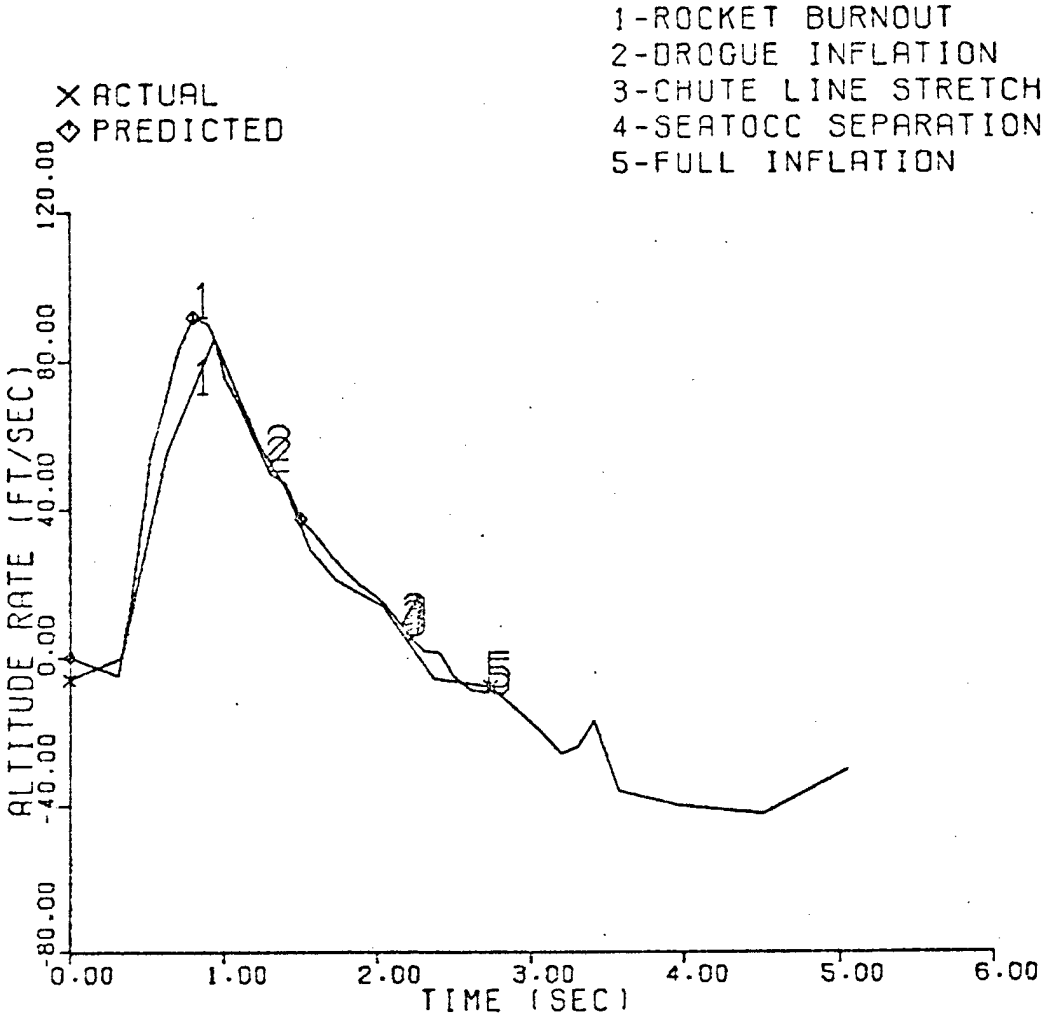


FIGURE G-43

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 7 600 KEAS 3 PERCENTILE DUMMY

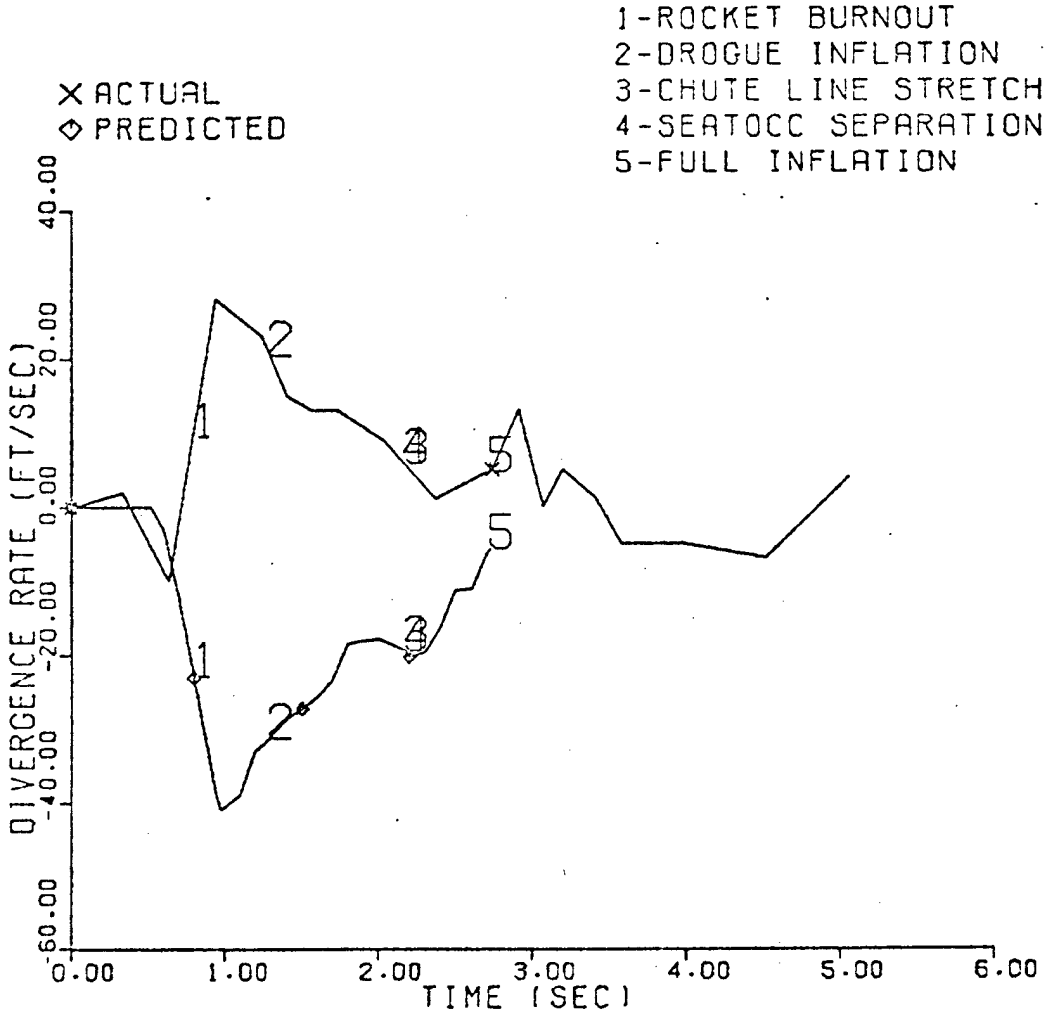
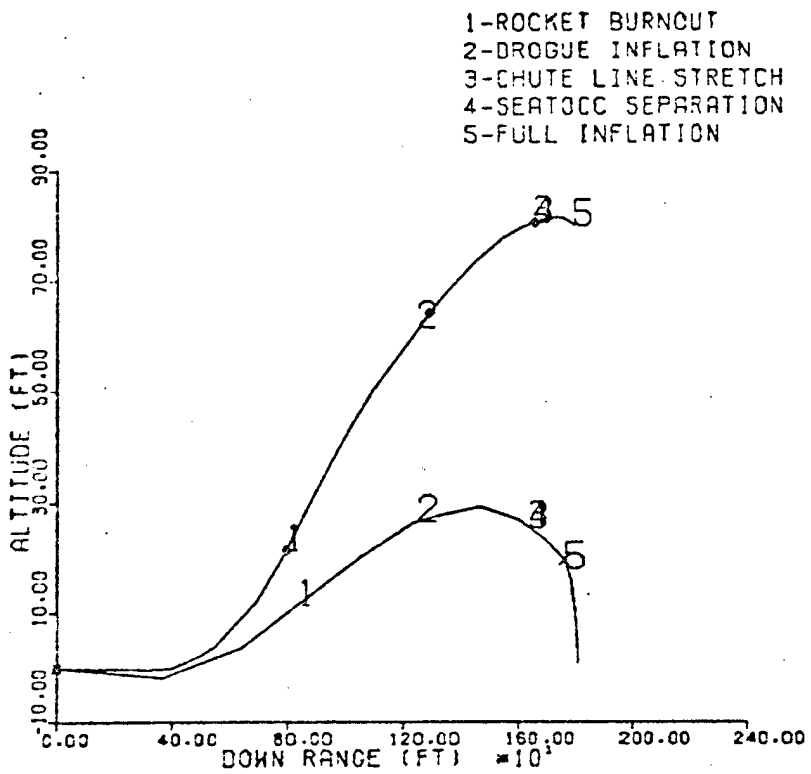


FIGURE G-49

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 8 600 KEAS 98 PERCENTILE DUMMY

X ACTUAL
◇ PREDICTED



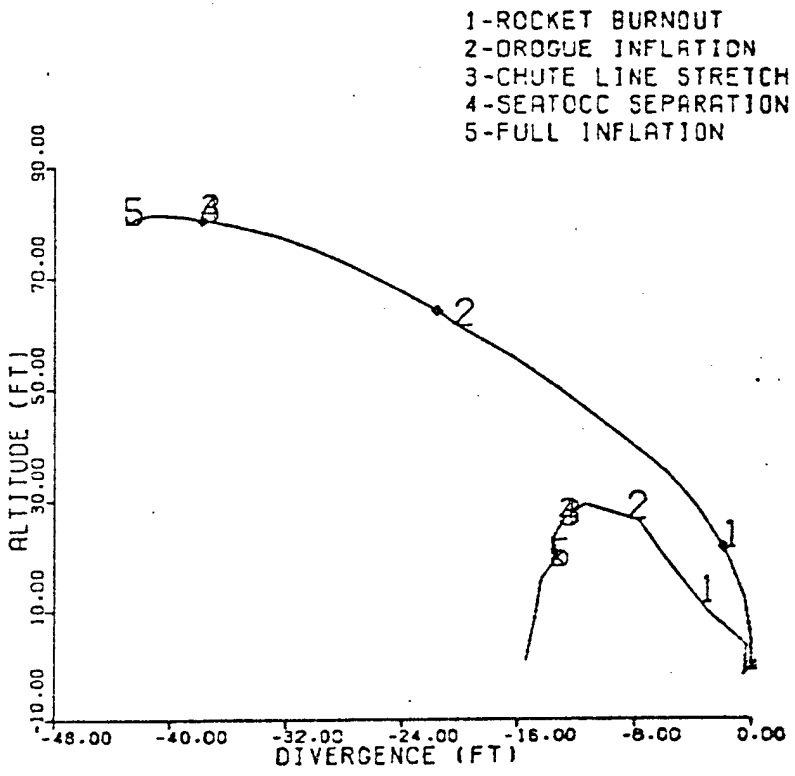


FIGURE G-50

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 8 600 KEAS 98 PERCENTILE DUMMY

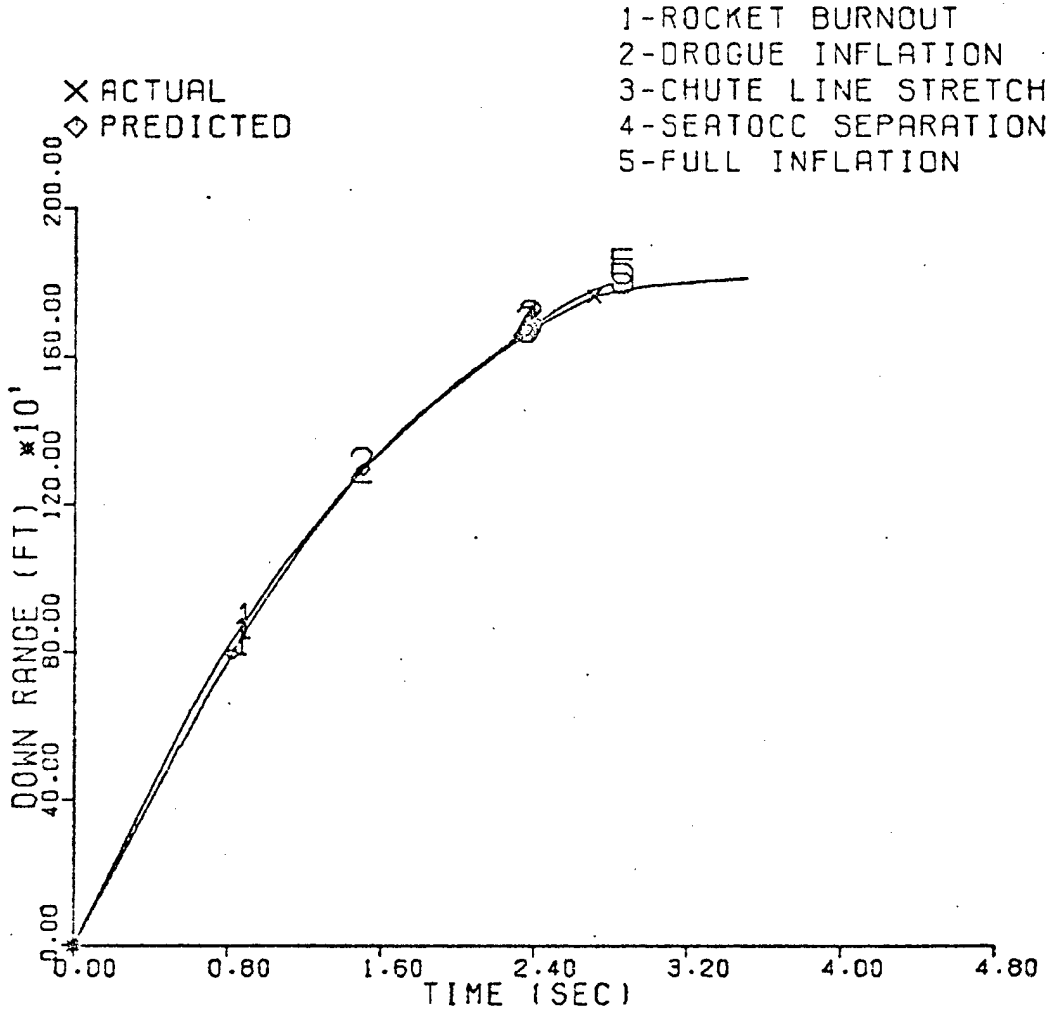


FIGURE G-51

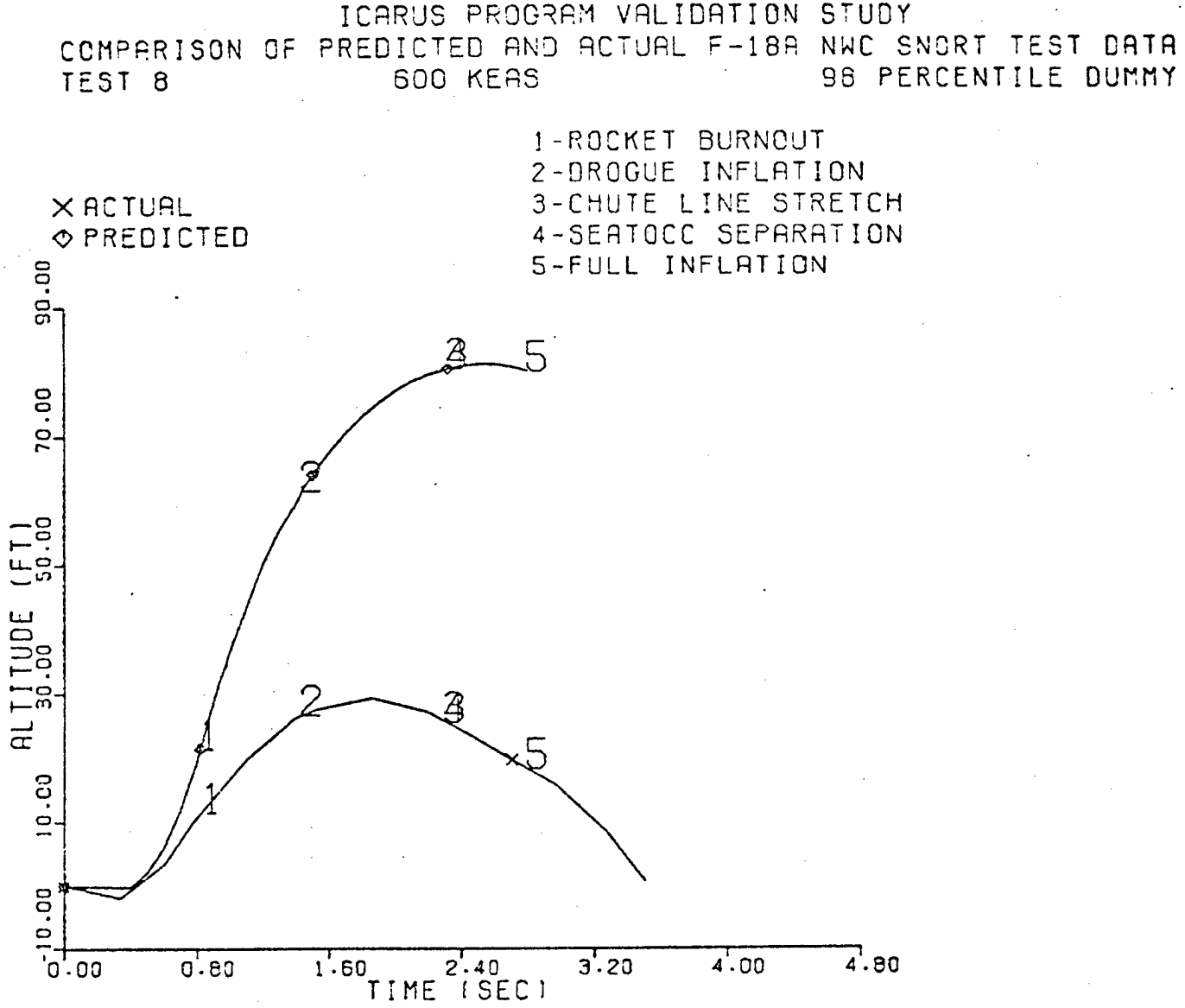

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 8
600 KEAS
98 PERCENTILE DUMMY
1-ROCKET BURNOUT
2-DROGUE INFLATION
3-CHUTE LINE STRETCH
4-SEATOCC SEPARATION
5-FULL INFLATION
X ACTUAL
◇ PREDICTED
ALTITUDE (FT)
90.00
70.00
50.00
30.00
10.00
-10.00
0.00
0.80
1.60
2.40
3.20
4.00
4.80
TIME (SEC)

FIGURE G-52

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 8 600 KEAS 98 PERCENTILE DUMMY

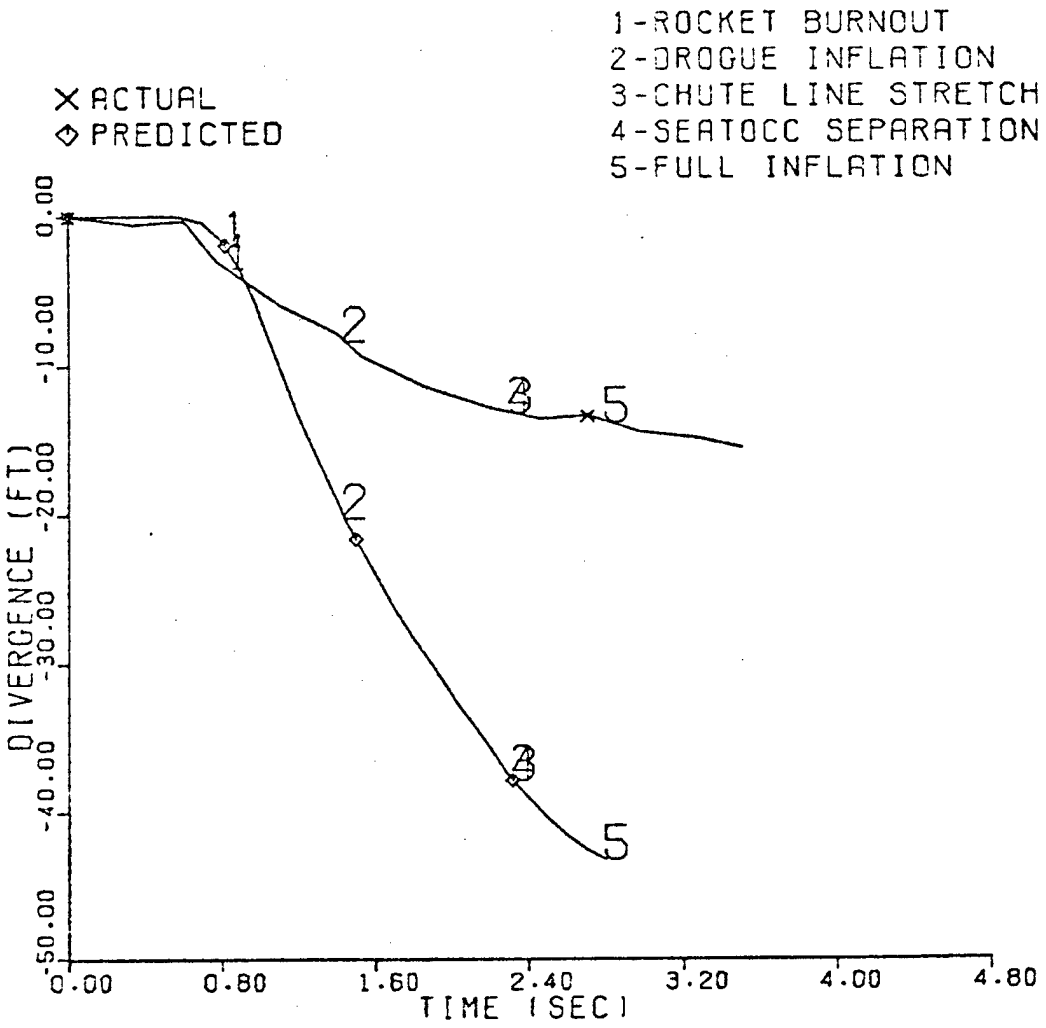


FIGURE G-53

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 8 600 KEAS 98 PERCENTILE DUMMY

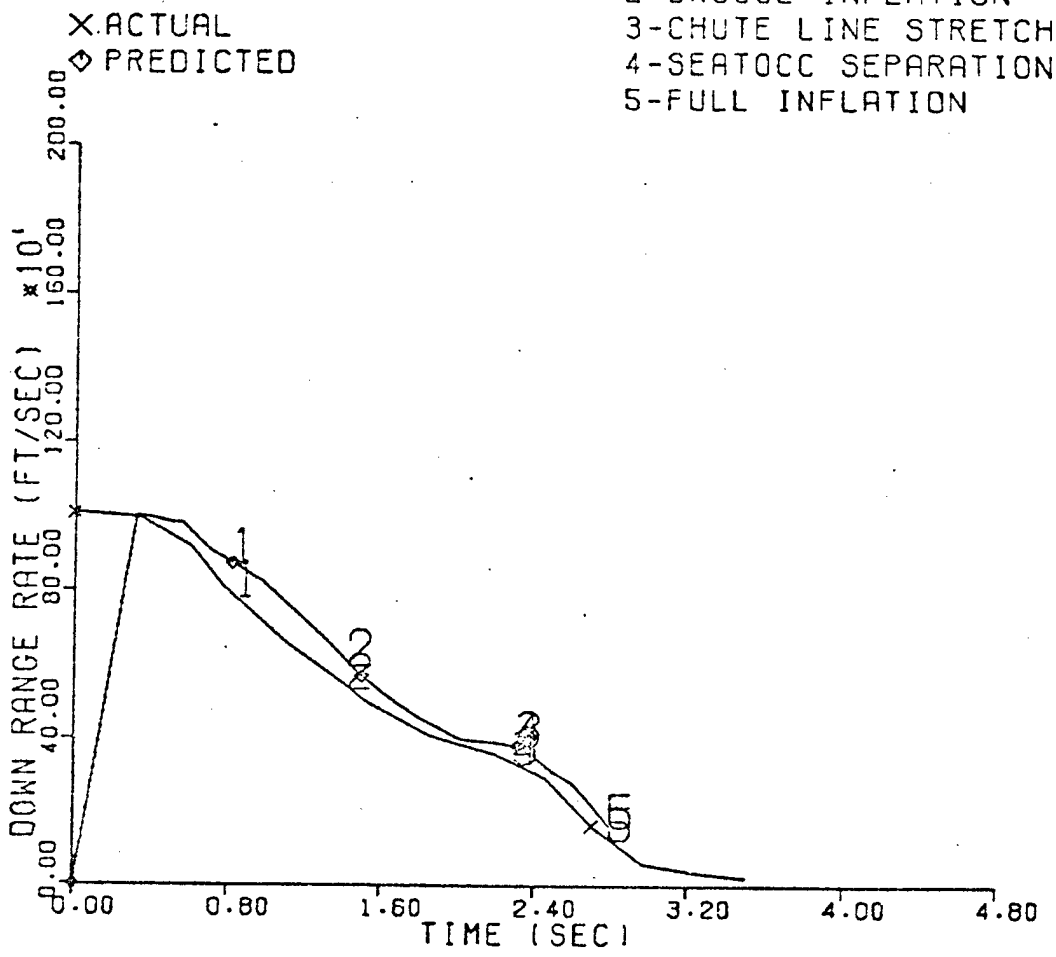


FIGURE G-54

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 8 600 KEAS 98 PERCENTILE DUMMY

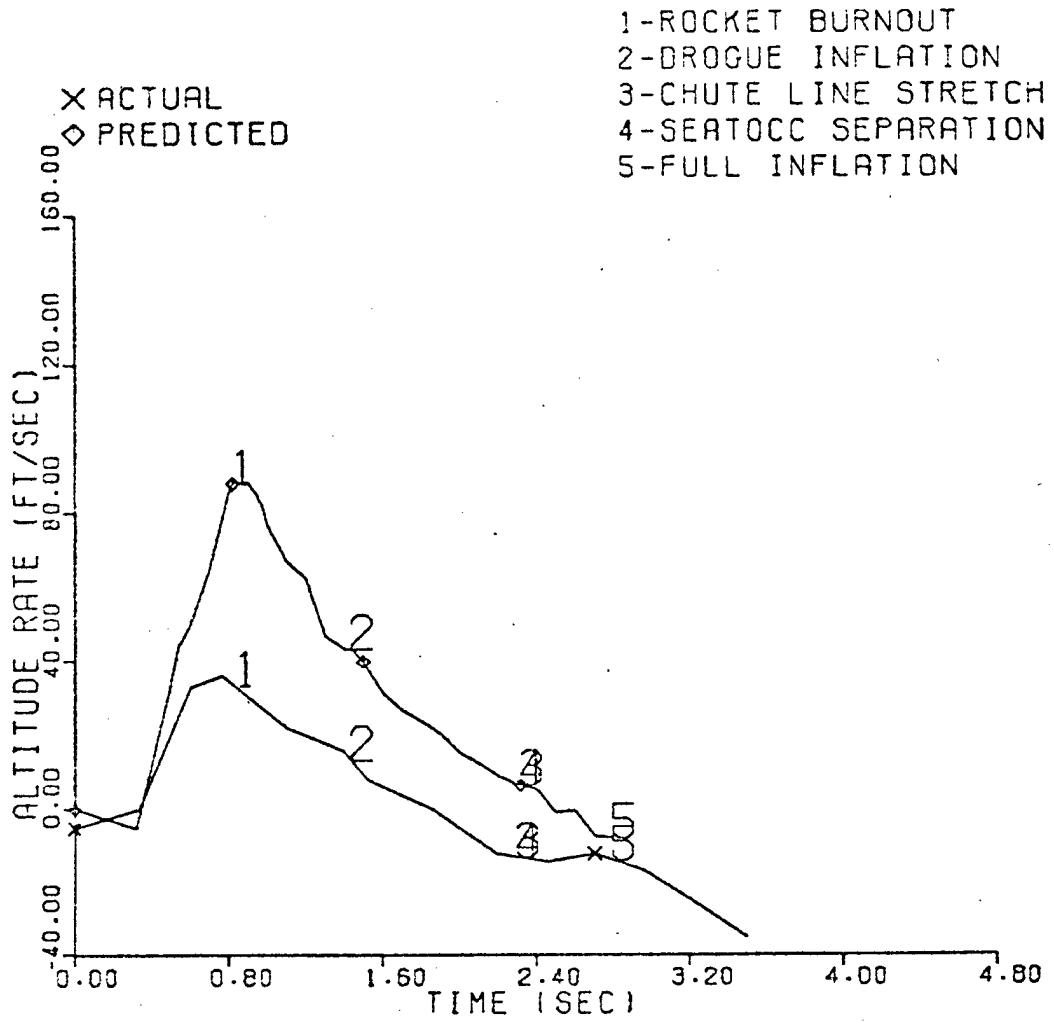


FIGURE G-55

ICARUS PROGRAM VALIDATION STUDY
COMPARISON OF PREDICTED AND ACTUAL F-18A NWC SNORT TEST DATA
TEST 8 600 KEAS 98 PERCENTILE DUMMY

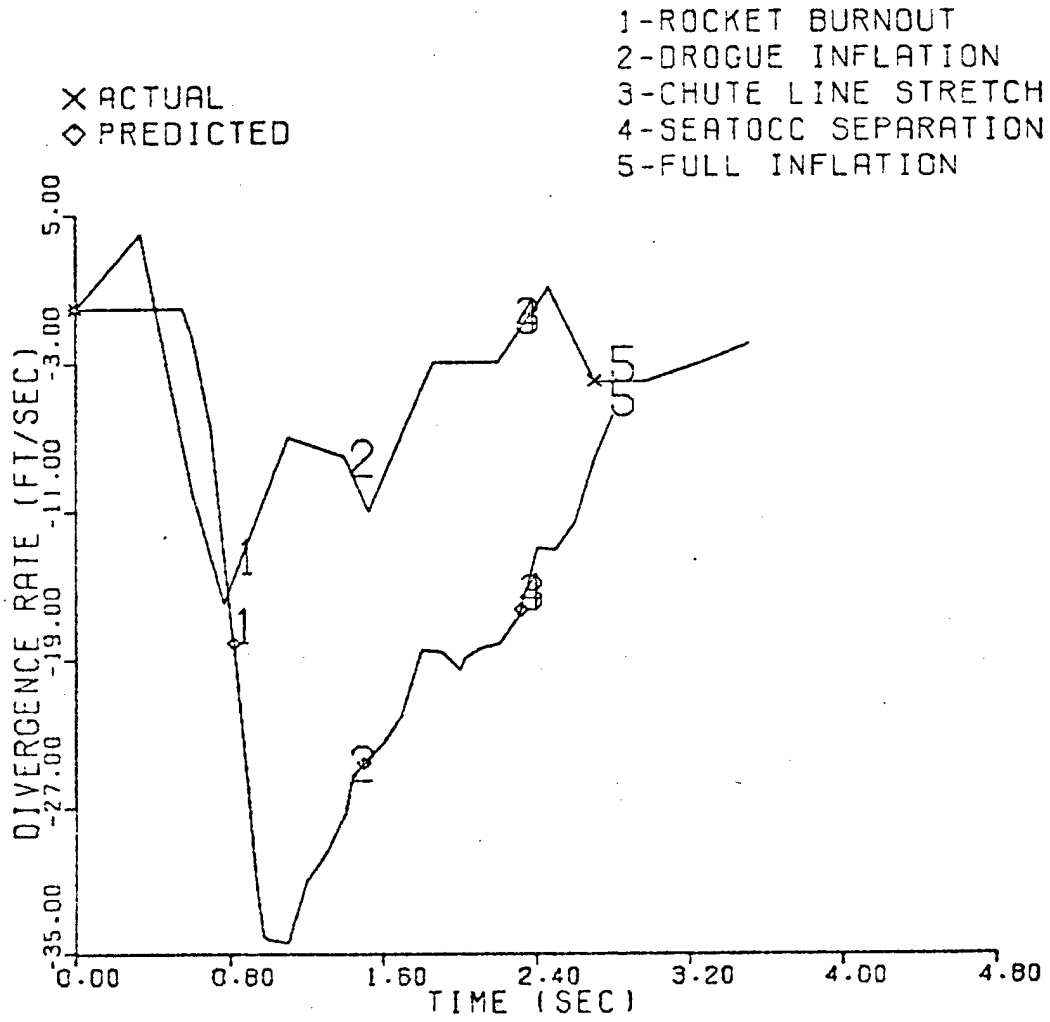


FIGURE G-56

APPENDIX H

Plotting Program (ICAPLTS)

The following examples show how to run the plotting program to plot 2 test files. Four basic plotting options are available to the user. An example of each is provided. (It should be noted that event times input are not the correct times.)

```
/get,tape1=f18nwc1,tape2=plt1
/call,icaplot
```

```
START OF TAPE
OPTIONS?C
ENTER NUMBER OF FILES
? 2
```

```
SPECIFY PLOTTING DESIRED:

1.  GENERATE STANDARD TEST PLOTS
      2 PLOTS PER PAGE
      ALT VS DOWNRANGE
      ALT VS DIVERGENCE

2.   GENERATE 6 SUCCESSIVE PLOTS
      1 PLOT PER PAGE
      ALTITUDE VS TIME
      DOWNRANGE VS TIME
      DIVERGENCE VS TIME
      X VEL VS TIME
      Y VEL VS TIME
      Z VEL VS TIME

3.   SELECT SPECIFIC OPTIONS

4.  JUST PLOT - NO OPTIONS

 THE FOLLOWING OPTIONS ARE IMPLEMENTED WITH (1,2):
      AUTOMATIC HARDCOPY
      3 LINES OF TITLE
      TITLE FOR EACH PLOT
      PLOT EVENT TIMES
? 1
```

```
ENTER 3 LINES OF TITLE
? demonstration plots
? plotting option 1
? nwc test 1
ENTER TITLE FOR FILE NUMBER  1
? nwc data
ENTER TITLE FOR FILE NUMBER  2
? nadc data
```

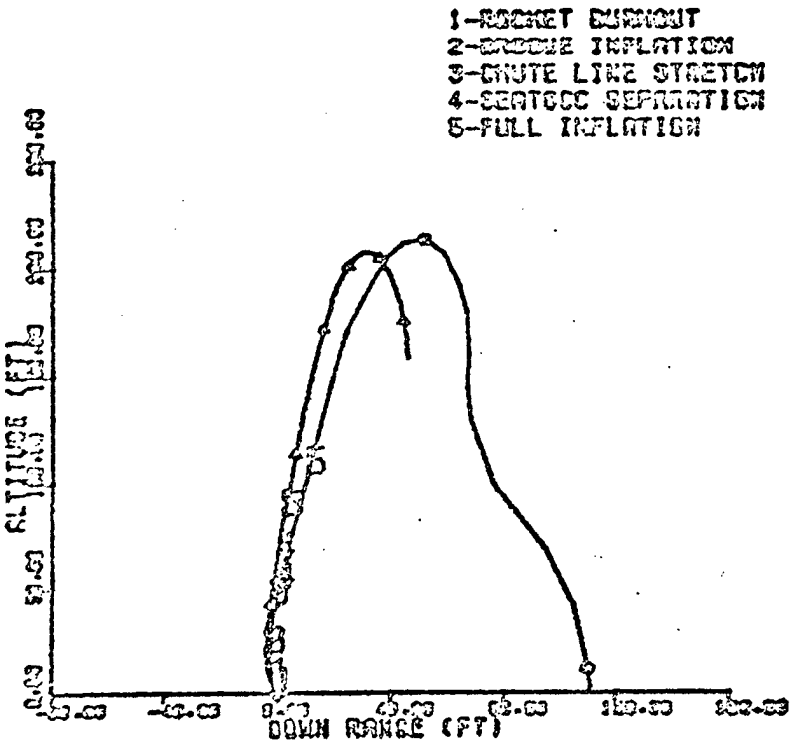
```
ENTER NUMBER OF EVENTS FOR FILE NUMBER  1
? 5
ENTER TIME FOR EVENT 1-ROCKET BURNOUT
? .3
ENTER TIME FOR EVENT 2-DROGUE INFLATION
? .5
ENTER TIME FOR EVENT 3-CHUTE LINE STRETCH
? .7
ENTER TIME FOR EVENT 4-SEATOCC SEPARATION
? .9
ENTER TIME FOR EVENT 5-FULL INFLATION
? 1.1
```

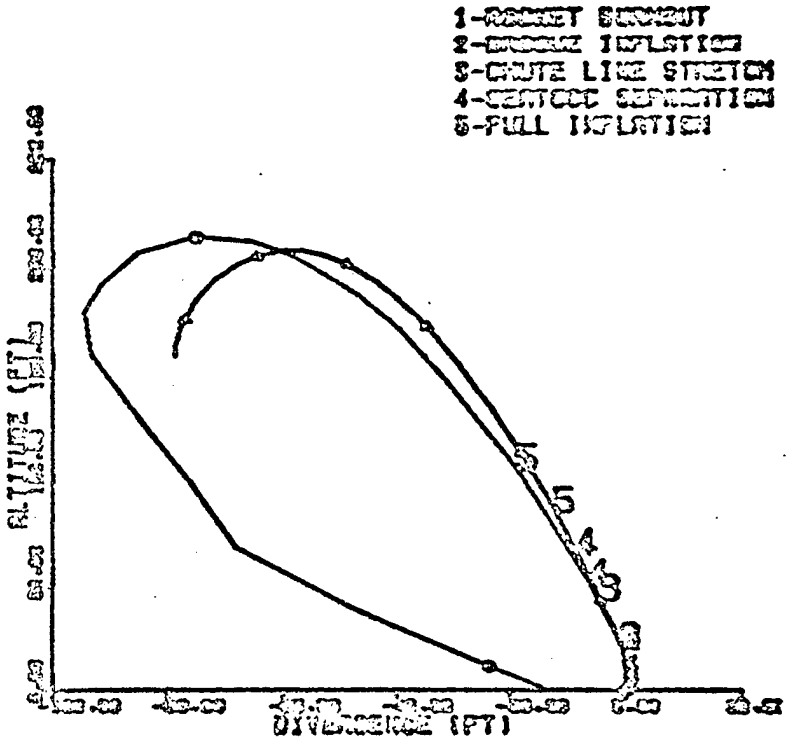
```
ENTER NUMBER OF EVENTS FOR FILE NUMBER  2
? 5
ENTER TIME FOR EVENT 1-ROCKET BURNOUT
? .4
ENTER TIME FOR EVENT 2-DROGUE INFLATION
? .6
ENTER TIME FOR EVENT 3-CHUTE LINE STRETCH
? .8
ENTER TIME FOR EVENT 4-SEATOCC SEPARATION
? 1.0
ENTER TIME FOR EVENT 5-FULL INFLATION
? 1.2
 DO YOU WISH TO OUTPUT THE DATE
ON EACH PLOT (Y,N)?

? y
```

DEMONSTRATION PLOTS
PLOTTING OPTION 1
NWC TEST 1

4 SEP 79

⊙ NWC DATA
△ NADC DATA





```
/get,tape1=f18nwc1,tape2=plt1
/call,icaplot
```

```
START OF TAPE
OPTIONS?C
ENTER NUMBER OF FILES
? 2
```

```
SPECIFY PLOTTING DESIRED:

1.  GENERATE STANDARD TEST PLOTS
      2 PLOTS PER PAGE
      ALT VS DOWNRANGE
      ALT VS DIVERGENCE

2.   GENERATE 6 SUCCESSIVE PLOTS
      1 PLOT PER PAGE
      ALTITUDE VS TIME
      DOWNRANGE VS TIME
      DIVERGENCE VS TIME
      X VEL VS TIME
      Y VEL VS TIME
      Z VEL VS TIME

3.   SELECT SPECIFIC OPTIONS

4.  JUST PLOT - NO OPTIONS

 THE FOLLOWING OPTIONS ARE IMPLEMENTED WITH (1,2):
      AUTOMATIC HARDCOPY
      3 LINES OF TITLE
      TITLE FOR EACH PLOT
      PLOT EVENT TIMES
? 2
```

```
ENTER 3 LINES OF TITLE
? demonstration plots
? plotting option 2
? nwc test 1
ENTER TITLE FOR FILE NUMBER  1
? nwc data
ENTER TITLE FOR FILE NUMBER  2
? nadc data
```

```
ENTER NUMBER OF EVENTS FOR FILE NUMBER  1
? 3
ENTER TIME FOR EVENT 1-ROCKET BURNOUT
? .4
ENTER TIME FOR EVENT 2-DROGUE INFLATION
? .7
ENTER TIME FOR EVENT 3-CHUTE LINE STRETCH
? 1.0
```

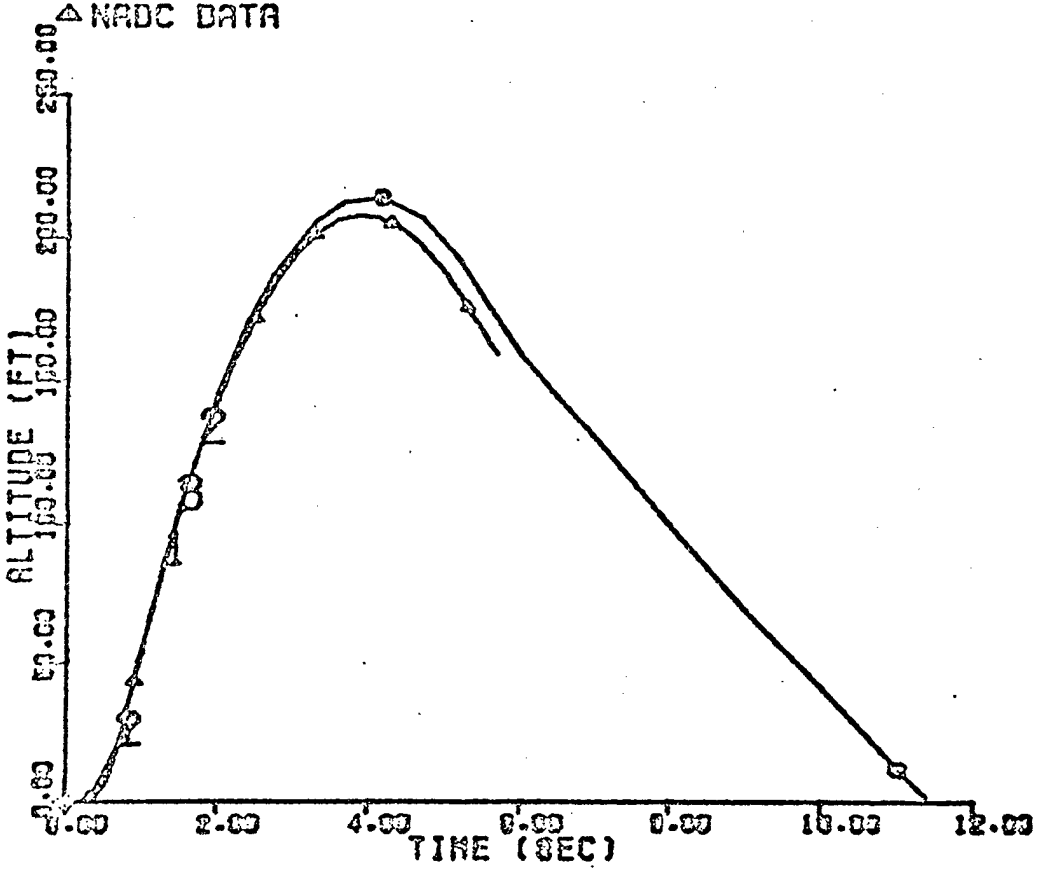
```
ENTER NUMBER OF EVENTS FOR FILE NUMBER  2
? 2
ENTER TIME FOR EVENT 1-ROCKET BURNOUT
? 1.2
ENTER TIME FOR EVENT 2-DROGUE INFLATION
? 1.7
 DO YOU WISH TO OUTPUT THE DATE
ON EACH PLOT (Y,N)?

? y
```

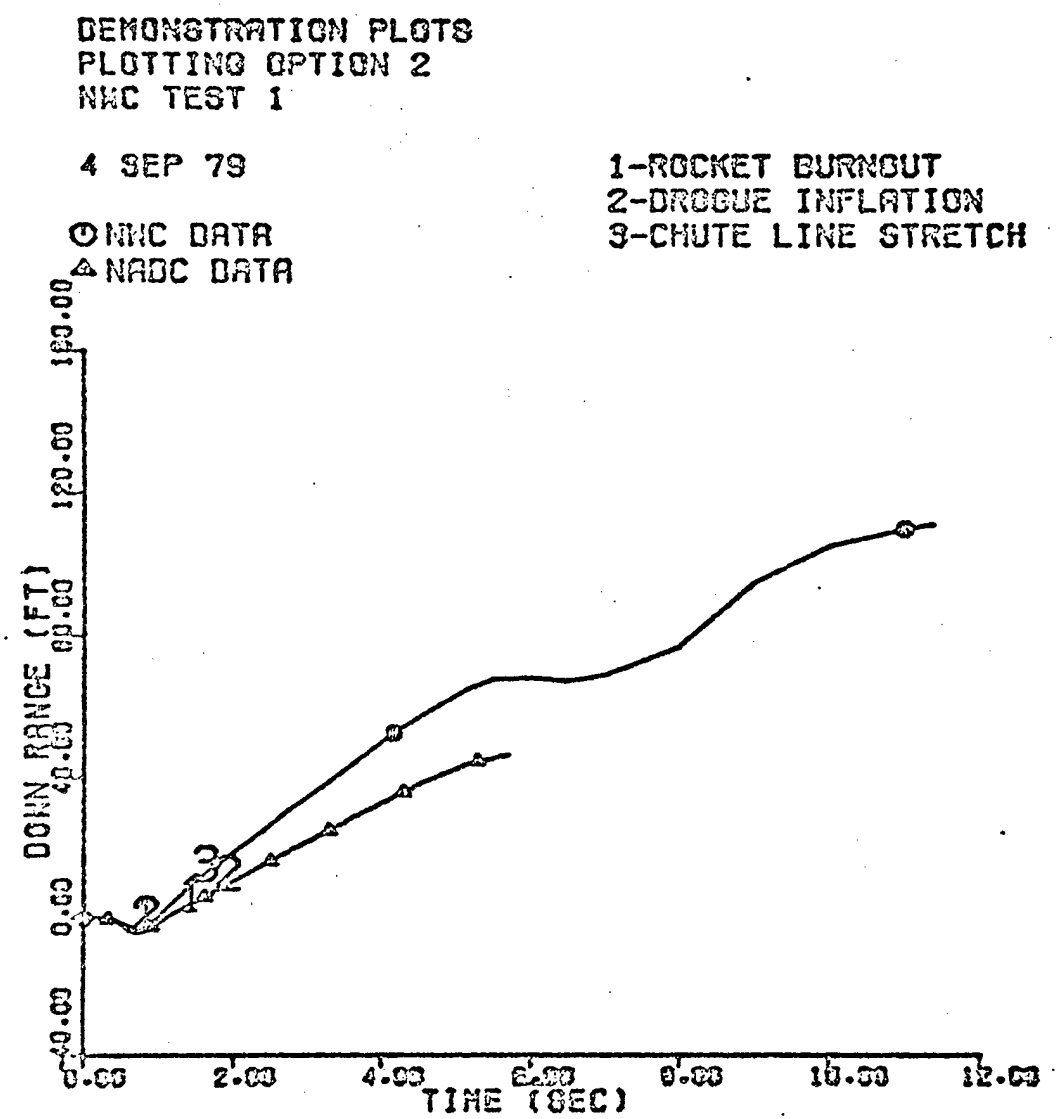
DEMONSTRATION PLOTS
PLOTTING OPTION 2
NWC TEST 1

4 SEP 79

⊙ NWC DATA
△ NADC DATA

1-ROCKET BURNOUT
2-DROGUE INFLATION
3-CHUTE LINE STRETCH



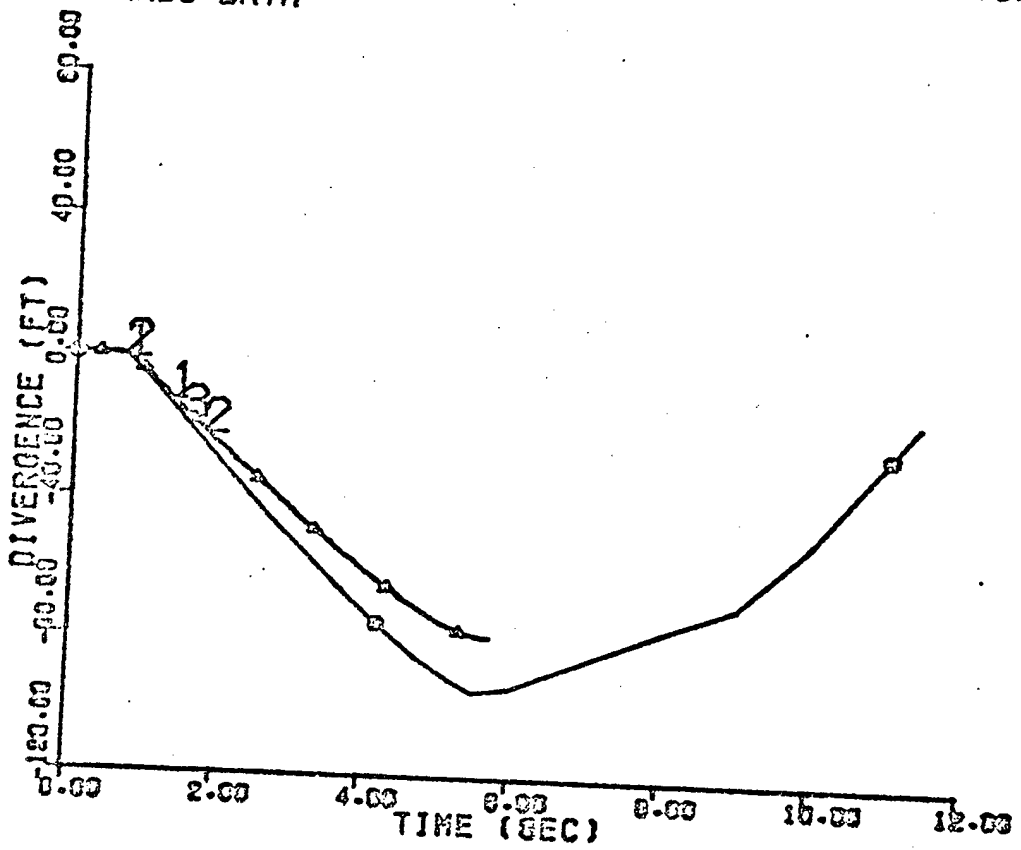

DEMONSTRATION PLOTS
PLOTTING OPTION 2
NWC TEST 1
4 SEP 79
1-ROCKET BURNOUT
2-DROGUE INFLATION
3-CHUTE LINE STRETCH
NWC DATA
NADC DATA
DOWN RANGE (FT)
160.00
120.00
80.00
40.00
0.00
-40.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
TIME (SEC)

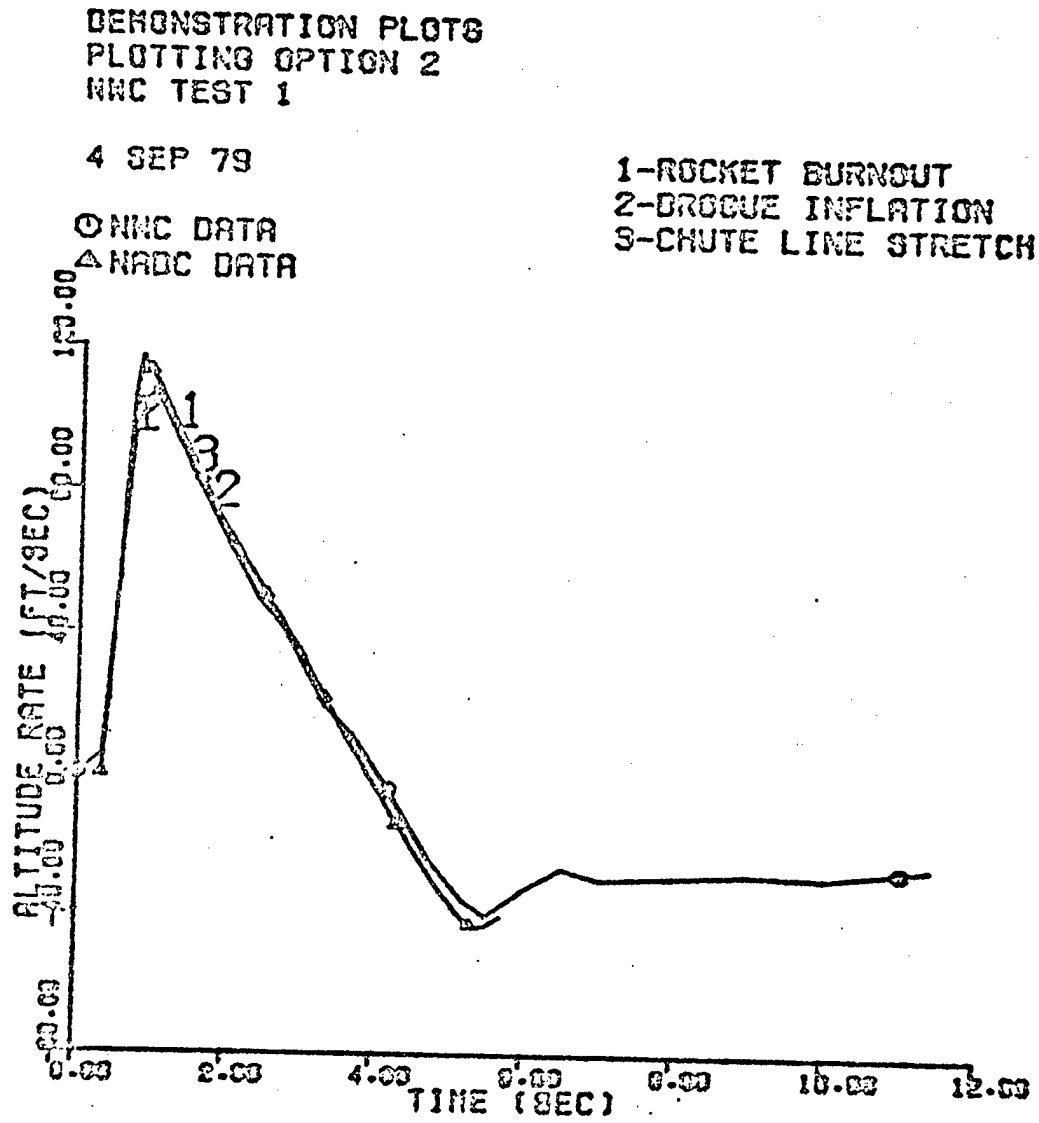
DEMONSTRATION PLOTS
PLOTTING OPTION 2
NWC TEST 1

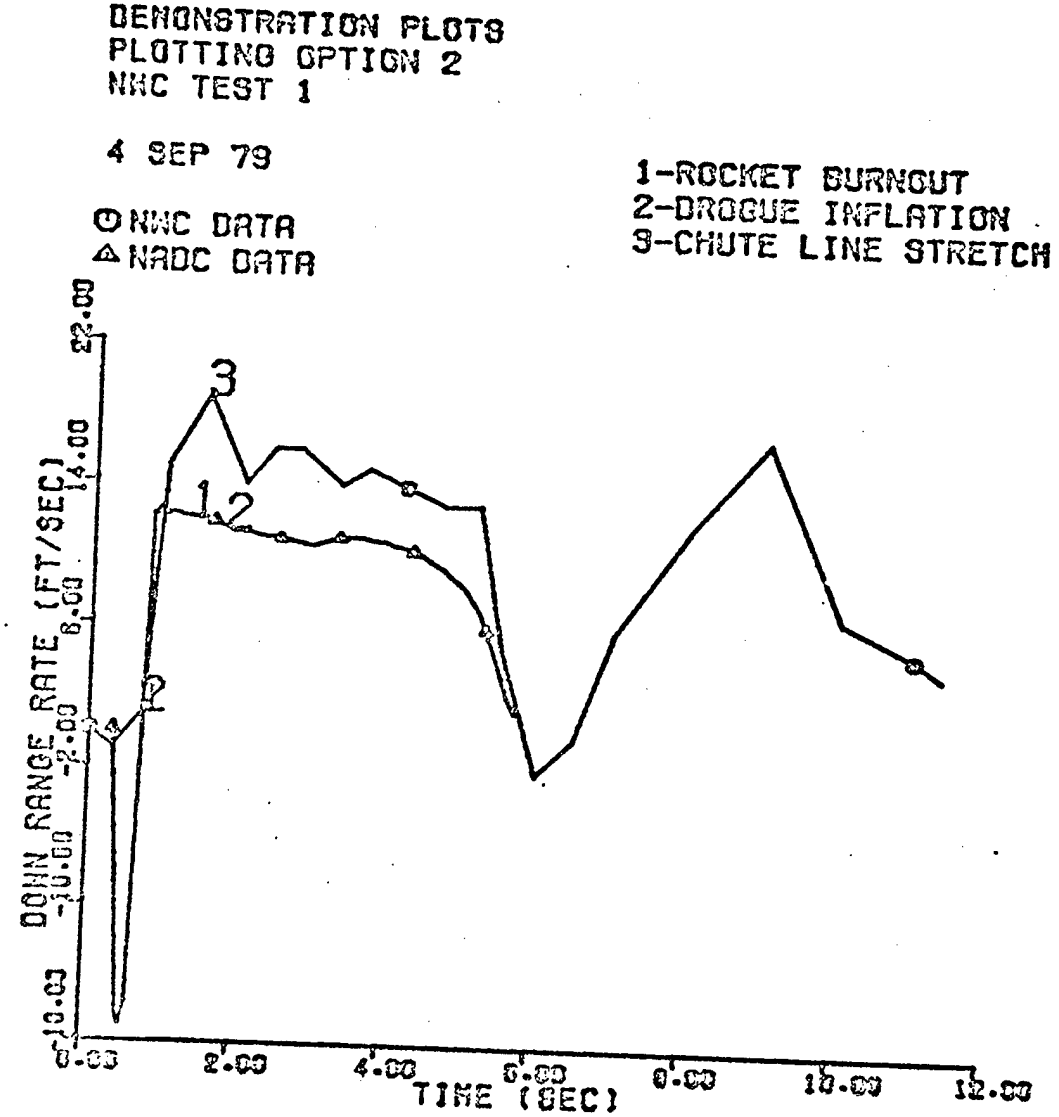
4 SEP 79

⊙ NWC DATA
△ NADC DATA

1-ROCKET BURNOUT
2-DROGUE INFLATION
3-CHUTE LINE STRETCH




DEMONSTRATION PLOTS
PLOTTING OPTION 2
NWC TEST 1
4 SEP 79
⊙NWC DATA
△NADC DATA
1-ROCKET BURNOUT
2-DROGUE INFLATION
3-CHUTE LINE STRETCH
ALTITUDE RATE (FT/SEC)
100.00
50.00
0.00
-50.00
-100.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
TIME (SEC)

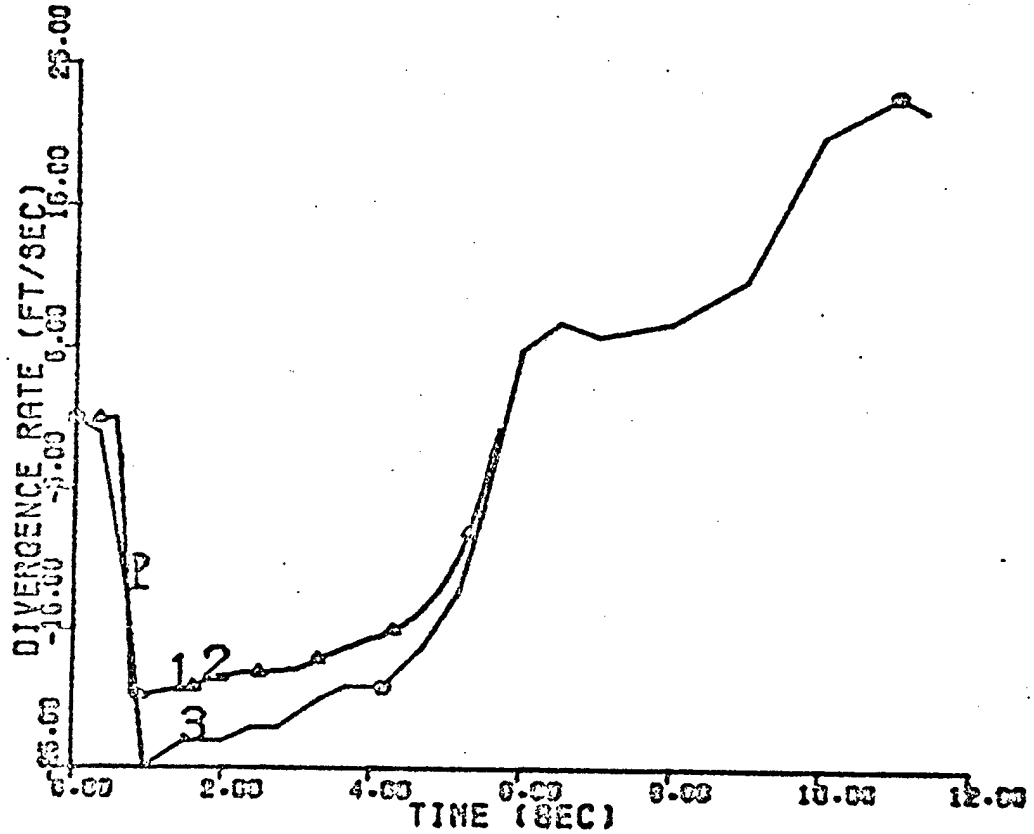

DEMONSTRATION PLOTS
PLOTTING OPTION 2
NWC TEST 1
4 SEP 79
NWC DATA
NADC DATA
1-ROCKET BURNOUT
2-DROGUE INFLATION
3-CHUTE LINE STRETCH
DOWN RANGE RATE (FT/SEC)
22.00
14.00
6.00
-2.00
-10.00
-18.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
TIME (SEC)

DEMONSTRATION PLOTS
PLOTTING OPTION 2
NWC TEST 1

4 SEP 79

⊙ NWC DATA
△ NADC DATA

1-ROCKET BURNOUT
2-DROGUE INFLATION
3-CHUTE LINE STRETCH



```
/get,tape1=f18nwc1,tape2=plt1
/call,icaplot
```

```
START OF TAPE
OPTIONS?C
ENTER NUMBER OF FILES
? 2
```

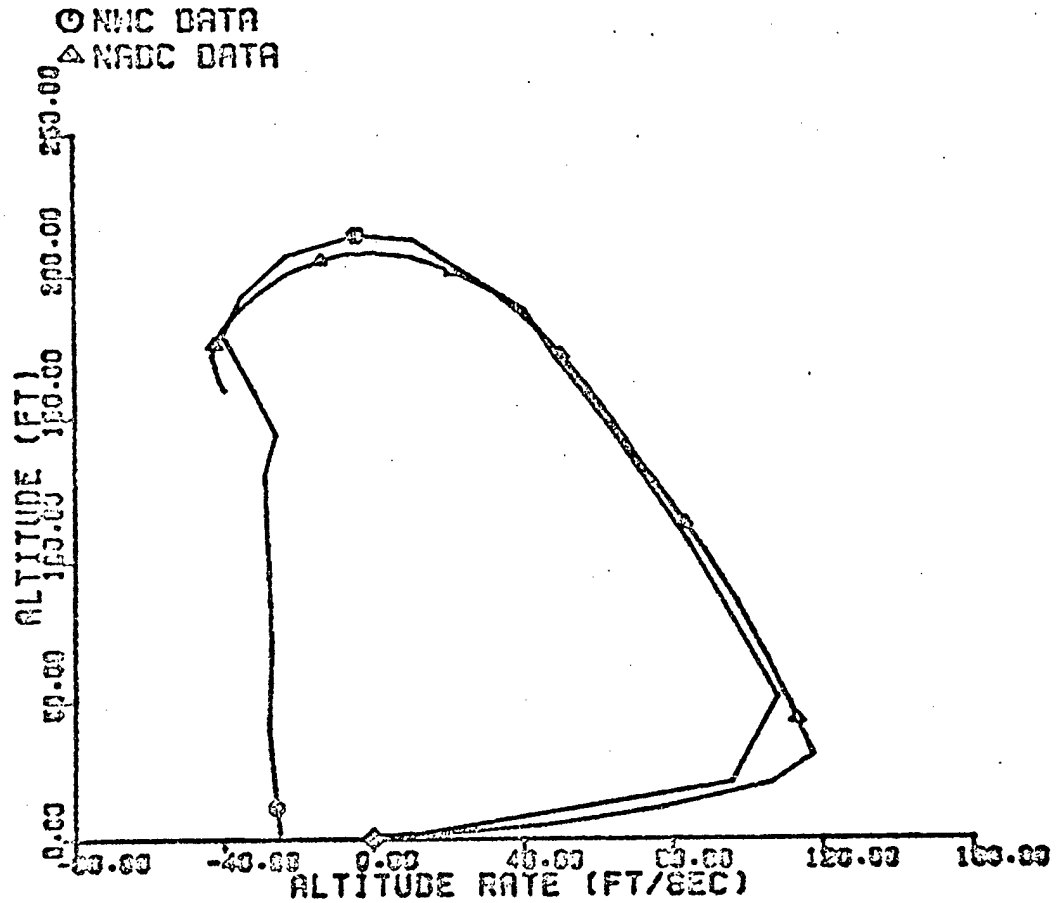
```
SPECIFY PLOTTING DESIRED:

1.  GENERATE STANDARD TEST PLOTS
      2 PLOTS PER PAGE
      ALT VS DOWNRANGE
      ALT VS DIVERGENCE

2.   GENERATE 6 SUCCESSIVE PLOTS
      1 PLOT PER PAGE
      ALTITUDE VS TIME
      DOWNRANGE VS TIME
      DIVERGENCE VS TIME
      X VEL VS TIME
      Y VEL VS TIME
      Z VEL VS TIME

3.   SELECT SPECIFIC OPTIONS

4.  JUST PLOT - NO OPTIONS

 THE FOLLOWING OPTIONS ARE IMPLEMENTED WITH (1,2):
      AUTOMATIC HARDCOPY
      3 LINES OF TITLE
      TITLE FOR EACH PLOT
      PLOT EVENT TIMES
? 3
ENTER NUMBER OF PLOTS PER PAGE (1,2)
? 1
DO YOU WANT 3 LINES OF TITLE? (Y,N)
? y
DO YOU WANT EVENTS PLOTTED? (Y,N)
? n
 DO YOU WANT TO LABEL FILES? (Y,N)
? y
```

```
ENTER 3 LINES OF TITLE
? demonstration plotting
? plotting option 3
? nwc test 1
ENTER TITLE FOR FILE NUMBER  1
? nwc data
ENTER TITLE FOR FILE NUMBER  2
? nadc data
 DO YOU WISH TO OUTPUT THE DATE
ON EACH PLOT (Y,N)?

? y
```

```
THE FOLLOWING ARE THE CODES FOR THE PLOTTING VARIABLES
          1---X ACCELERATION
          2---Y ACCELERATION
          3---Z ACCELERATION
          4---X VELOCITY
          5---Y VELOCITY
          6---Z VELOCITY
          7---X POSITION
          8---Y POSITION
          9---Z POSITION
          10--YAW RATE
          11--PITCH RATE
          12--ROLL RATE
          13--YAW
          14--PITCH
          15--ROLL
          16--TIME

ENTER THE CODE FOR THE INDEPENDENT VARIABLE
FOLLOWED BY THAT OF THE DEPENDENT VARIABLE
? 5 8
```

DEMONSTRATION PLOTTING
PLOTTING OPTION 3
NMC TEST 1

4 SEP 79



DO YOU WANT TO PLOT AGAIN?
? n

```
/get,tape1=f18nwc1,tape2=plti
/call,icaplot
```

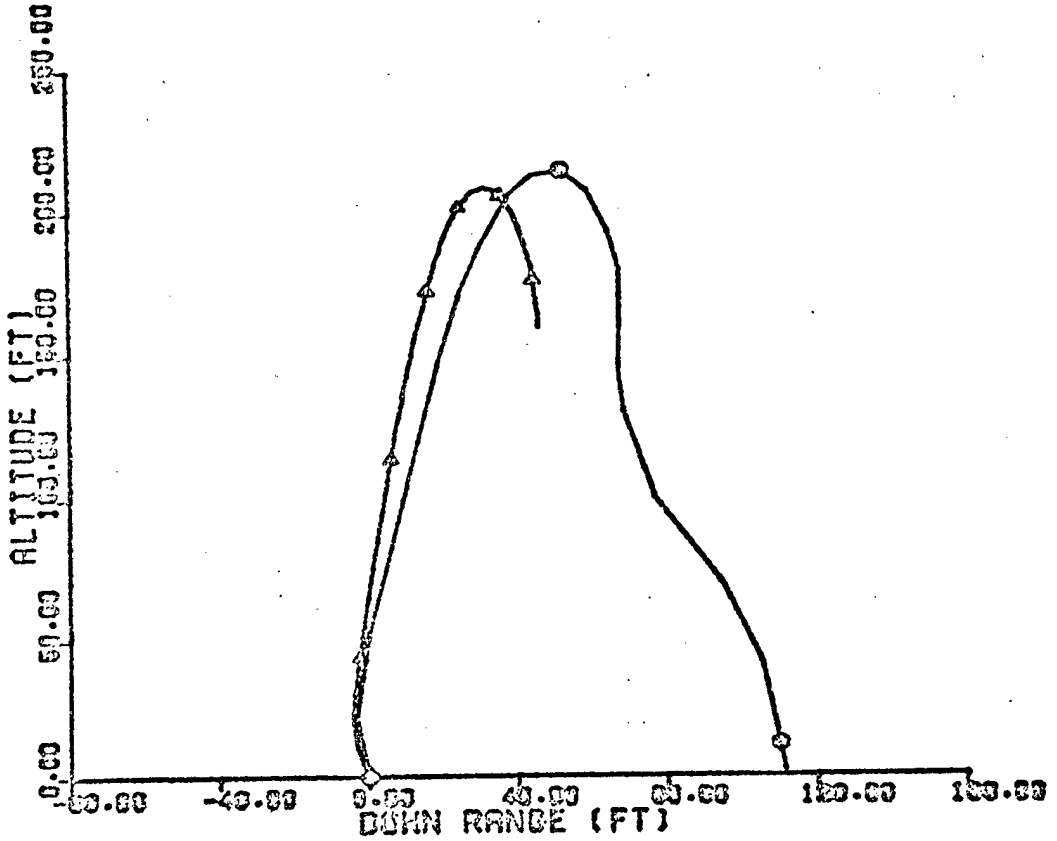
```
START OF TAPE
OPTIONS?C
ENTER NUMBER OF FILES
? 2
```

```
SPECIFY PLOTTING DESIRED:

1.  GENERATE STANDARD TEST PLOTS
      2 PLOTS PER PAGE
      ALT VS DOWNRANGE
      ALT VS DIVERGENCE

2.   GENERATE 6 SUCCESSIVE PLOTS
      1 PLOT PER PAGE
      ALTITUDE VS TIME
      DOWNRANGE VS TIME
      DIVERGENCE VS TIME
      X VEL VS TIME
      Y VEL VS TIME
      Z VEL VS TIME

3.   SELECT SPECIFIC OPTIONS

4.  JUST PLOT - NO OPTIONS

 THE FOLLOWING OPTIONS ARE IMPLEMENTED WITH (1,2):
      AUTOMATIC HARDCOPY
      3 LINES OF TITLE
      TITLE FOR EACH PLOT
      PLOT EVENT TIMES
? 4
ENTER NUMBER OF PLOTS PER PAGE (1,2)
? 1
```

```
 DO YOU WISH TO OUTPUT THE DATE
ON EACH PLOT (Y,N)?

? y
```

```
THE FOLLOWING ARE THE CODES FOR THE PLOTTING VARIABLES
          1---X ACCELERATION
          2---Y ACCELERATION
          3---Z ACCELERATION
          4---X VELOCITY
          5---Y VELOCITY
          6---Z VELOCITY
          7---X POSITION
          8---Y POSITION
          9---Z POSITION
          10--YAW RATE
          11--PITCH RATE
          12--ROLL RATE
          13--YAW
          14--PITCH
          15--ROLL
          16--TIME

ENTER THE CODE FOR THE INDEPENDENT VARIABLE
FOLLOWED BY THAT OF THE DEPENDENT VARIABLE
? 7 8
```

4 SEP 79


ALTITUDE (FT)
0.00
50.00
100.00
150.00
200.00
250.00
-80.00
-40.00
0.00
40.00
80.00
120.00
160.00
DOWN RANGE (FT)

```
 DO YOU WANT TO PLOT AGAIN?
? n
```

APPENDIX I

```
      PROGRAM YTHRUST(INPUT,OUTPUT)                                          000100
      DIMENSION TA[illegible]5,2),TABNAM(35,2)                               000110
      DATA((TABNAM(I,J),I=1,31),J=1,1)/.0,.01,.02,.03,.04,.05,.06,.07,.08,  000120
     1 .09,.10,.11,.12,.13,.14,.15,.16,.17,.18,.19,.2,.21,.22,              000130
     2 .23,.24,.25,.26,.27,.28,.29,.3/                                       000140
      DATA (TABNAM(I,2),I=1,31)/.0,4755.95,4505.4,4513.16,4562.99,           000150
     1 4604.32,4620.95,4611.37,4615.05,4618.40,4614.2,4612.05,4609.38,       000160
     3 4604.21,4593.11,4581.13,4567.96,4554.62,4537.87,4509.18,              000170
     4 4474.03,4440.78,4409.99,4364.23,4284.04,4084.6,3287.59,               000180
     5 1764.14,650.48,67.8,0.0/                                              000190
      DATA (NPOINT=31),(TBURN=.26),(J1=0)                                    000200
      TSTRT=TABNAM(1,1)                                                      000210
      TSTP=TABNAM(NPOINT,1)                                                  000220
      THSTRT=TABNAM(1,2)                                                     000230
      THSTP=TABNAM(NPOINT,2)                                                 000240
      TPRCNT=TBURN/(TSTP-TSTRT)                                              000250
      AOLD=0.0                                                               000260
      N1=NPOINT-1                                                            000270
      DO 10 I=1,N1                                                           000280
      AOLD=AOLD+(TABNAM(I,2)+TABNAM((I+1),2))*(TABNAM((I+1),1)-              000290
     1 TABNAM(I,1))/2.0                                                      000300
   10 CONTINUE                                                               000310
   15 ANEW=0.0                                                               000320
      TNEW(1,1)=TABNAM(1,1)                                                  000330
      TNEW(1,2)=TABNAM(1,2)/TPRCNT                                           000340
      DO 20 I=2,NPOINT                                                       000350
      TNEW(I,1)=TNEW((I-1),1)+(TABNAM(I,1)-TABNAM((I-1),1))*TPRCNT           000360
      TNEW(I,2)=TABNAM(I,2)/TPRCNT                                           000370
      ANEW=ANEW+(TNEW((I-1),2)+TNEW(I,2))*(TNEW(I,1)-TNEW((I-1),1))/2.0      000380
   20 CONTINUE                                                               000390
      APRCNT=ANEW/AOLD                                                       000400
      IF (APRCNT.GT.0.98.AND.APRCNT.LT.1.02) GO TO 50                        000410
      TPRCNT=TPRCNT*APRCNT                                                   000420
      J1=J1+1                                                                000430
      IF(J1.GT.3) GO TO 50                                                   000440
      GO TO 15                                                               000450
   50 CONTINUE                                                               000460
      PRINT 120,APRCNT                                                       000470
      PRINT 100,NPOINT                                                       000480
      PRINT 105                                                              000490
      DO 60 I=1,NPOINT                                                       000500
      PRINT 110,TABNAM(I,1),TABNAM(I,2)                                      000510
   60 CONTINUE                                                               000520
      PRINT 200,NPOINT                                                       000530
      PRINT 105                                                              000540
      DO 70 I=1,NPOINT                                                       000550
      PRINT 210,TNEW(I,1),TNEW(I,2)                                          000560
   70 CONTINUE                                                               000570
  100 FORMAT(10X,*OLD THRUST TAPLE *,I4,*  POINTS*)                          000580
  105 FORMAT(//14X,*TIME*,17X,*THRUST*)                                      000590
  110 FORMAT(10X,F12.4,10X,F12.4)                                            000600
  120 FORMAT(//10X,*NEW AREA / OLD AREA = *,F12.2)                           000610
  200 FORMAT(10X,*NEW THRUST TABLE *,I4,*  POINTS*)                          000620
  210 FORMAT(10X,F12.4,10X,F12.4)                                            000630
      STOP                                                                   000640
```

← TIME (SEC)

← THRUST (LBS)

← NPOINT = No. OF POINTS.
TBURN = NEW BURN TIME

NEW AREA / OLD AREA = 1.00
OLD THRUST TABLE 31 POINTS

TIME	THRUST
.0000	.0000
.0100	4755.9500
.0200	4505.4000
.0300	4513.1600
.0400	4562.9900
.0500	4604.3200
.0600	4620.9500
.0700	4611.3700
.0800	4615.0500
.0900	4618.4000
.1000	4614.2000
.1100	4612.0500
.1200	4609.3800
.1300	4604.2100
.1400	4593.1100
.1500	4581.1300
.1600	4567.9600
.1700	4554.6200
.1800	4537.3700
.1900	4509.1800
.2000	4474.0300
.2100	4440.7800
.2200	4409.9900
.2300	4364.2300
.2400	4284.0400
.2500	4084.6000
.2600	3287.5900
.2700	1754.1400
.2800	650.4800
.2900	67.8000
.3000	.0000

NEW THRUST TABLE 31 POINTS

TIME	THRUST
.0000	.0000
.0087	5487.6346
.0173	5198.5385
.0260	5207.4923
.0347	5264.9885
.0433	5312.6769
.0520	5331.8654
.0607	5320.8115
.0693	5325.0577
.0780	5328.9231
.0867	5324.0769
.0953	5321.5962
.1040	5318.5154
.1127	5312.5500
.1213	5299.7423
.1300	5285.9192
.1387	5270.7231
.1473	5255.3308
.1560	5236.0038
.1647	5202.9000
.1733	5162.3423
.1820	5123.9769
.1907	5088.4500
.1993	5035.6500
.2080	4943.1231
.2167	4713.0000
.2253	3793.3731
.2340	2024.0077
.2427	750.5538
.2513	78.2308
.2600	.0000

APPENDIX J

LISTING OF OUTPUT FROM PROGRAM COMPARE

TAPE 1 = ICARUS PROGRAM VALIDATION STUDY
F-18A NWC SHORT SLED TEST 3, 0 KEAS, 03 PERCENTILE DUMMY

TAPE 2 = ICARUS PROGRAM VALIDATION STUDY
F-18A NWC SHORT SLED TEST 4, 225 KEAS, 03 PERCENTILE DUMMY

TAPE 3 = ICARUS PROGRAM VALIDATION STUDY
F-18A NWC SHORT SLED TEST 5, 435 KEAS, 03 PERCENTILE DUMMY

TAPE 4 = ICARUS PROGRAM VALIDATION STUDY
F-18A NWC SHORT SLED TEST 7, 600 KEAS, 03 PERCENTILE DUMMY

TAPE 5 = ICARUS PROGRAM VALIDATION STUDY
F-18A NWC SHORT SLED TEST 1, 0 KEAS, 98 PERCENTILE DUMMY

TAPE 6 = ICARUS PROGRAM VALIDATION STUDY
F-18A NWC SHORT SLED TEST 2, 225 KEAS, 98 PERCENTILE DUMMY

TAPE 7 = ICARUS PROGRAM VALIDATION STUDY
F-18A NWC SHORT SLED TEST 6, 435 KEAS, 98 PERCENTILE DUMMY

TAPE 8 = ICARUS PROGRAM VALIDATION STUDY
F-18A NWC SHORT SLED TEST 8, 600 KEAS, 98 PERCENTILE DUMMY

		TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
1	ISMA	1	1	1	1	1	1	1	1
2	ISTOP	0	0	0	0	0	0	0	0
3	ISMS	1	1	1	1	1	1	1	1
4	ISEAT	0	0	0	0	0	0	0	0
5	INT(5)	1	1	1	1	1	1	1	1
6	INT(6)	1	1	1	1	1	1	1	1
7	INT(7)	0	0	0	0	0	0	0	0
8	INT(8)	0	0	0	0	0	0	0	0
9	INT(9)	1	1	1	1	1	1	1	1
10	INT(10)	0	0	0	0	0	0	0	0
11	INT(11)	0	0	0	0	0	0	0	0
12	INT(12)	0	0	0	0	0	0	0	0
13	INT(13)	0	0	0	0	0	0	0	0
14	INT(14)	0	0	0	0	0	0	0	0
15	INT(15)	0	0	0	0	0	0	0	0
16	INT(16)	0	0	0	0	0	0	0	0
17	INT(17)	0	0	0	0	0	0	0	0
18	INT(18)	0	0	0	0	0	0	0	0
19	INT(19)	0	0	0	0	0	0	0	0
20	INT(20)	0	0	0	0	0	0	0	0
21	INT(21)	0	0	0	0	0	0	0	0
22	INT(22)	0	0	0	0	0	0	0	0
23	INT(23)	0	0	0	0	0	0	0	0
24	INT(24)	0	0	0	0	0	0	0	0
25	INT(25)	0	0	0	0	0	0	0	0
26	INT(26)	0	0	0	0	0	0	0	0
27	INT(27)	0	0	0	0	0	0	0	0
28	INT(28)	0	0	0	0	0	0	0	0
29	INT(29)	0	0	0	0	0	0	0	0
30	INT(30)	0	0	0	0	0	0	0	0
31	IPROP	1	1	1	1	1	1	1	1
32	IPLOT	0	0	0	0	0	0	0	0
33	IPECH	0	0	0	0	0	0	0	0
34	IAERO	0	0	0	0	0	0	0	0
35	IDFLT	1	1	1	1	1	1	1	1
36	ITARP	1	1	1	1	1	1	1	1
37	IRSW(1)	0	0	0	0	0	0	0	0
38	IRSW(2)	1	1	1	1	1	1	1	1
39	IRSW(3)	1	1	1	1	1	1	1	1
40	IRSW(4)	1	1	1	1	1	1	1	1
41	IRSW(5)	1	1	1	1	1	1	1	1
42	IRSW(6)	0	0	0	0	0	0	0	0
43	IRSW(7)	0	0	0	0	0	0	0	0
44	IRSW(8)	0	0	0	0	0	0	0	0
45	IRSW(9)	0	0	0	0	0	0	0	0
46	IRSW(10)	1	1	1	1	1	1	1	1
47	IRSW(11)	0	0	0	0	0	0	0	0
48	IRSW(12)	0	0	0	0	0	0	0	0
49	IRSW(13)	1	1	1	1	1	1	1	1
50	IRSW(14)	1	1	1	1	1	1	1	1
51	IRSW(15)	1	1	1	1	1	1	1	1
52	IRSW(16)	1	1	1	1	1	1	1	1
53	IRSW(17)	1	1	1	1	1	1	1	1
54	IRSW(18)	0	0	0	0	0	0	0	0
55	IRSW(19)	1	1	1	1	1	1	1	1
56	IRSW(20)	0	0	0	0	0	0	0	0
57	IRSW(21)	0	0	0	0	0	0	0	0
58	IRSW(22)	0	0	0	0	0	0	0	0
59	IRSW(23)	0	0	0	0	0	0	0	0
60	IRSW(24)	0	0	0	0	0	0	0	0
61	IRSW(25)	2	2	2	2	2	2	2	2
62	IRSW(26)	0	0	0	0	0	0	0	0
63	IRSW(27)	0	0	0	0	0	0	0	0
64	IRSW(28)	0	0	0	0	0	0	0	0
65	IRSW(29)	0	0	0	0	0	0	0	0
66	IRSW(30)	0	0	0	0	0	0	0	0
67	IRSW(31)	0	0	0	0	0	0	0	0
68	IRSW(32)	0	0	0	0	0	0	0	0
69	IRSW(33)	0	0	0	0	0	0	0	0
70	IRSW(34)	0	0	0	0	0	0	0	0
71	IRSW(35)	0	0	0	0	0	0	0	0

		TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
SECTION 1 CONTAINS 12 ITEMS									
1	PHIC	-90.0000	-90.0000	-90.0000	-90.0000	-90.0000	-90.0000	-90.0000	-90.0000
2	PSIC	-22.0000	-22.0000	-22.0000	-22.0000	-22.0000	-22.0000	-22.0000	-22.0000
3	THETAC	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	PHISC	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000
5	PSISC	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	THETSC	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	PSIV	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	VROC	0.0000	-1.9000	-3.8000	-5.1000	0.0000	-1.9000	-3.7000	-5.0000
9	AAT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	YAW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	PITCH	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	ROLL	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000	90.0000

		TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
SECTION 2 CONTAINS 76 ITEMS									
1	XAC	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	YAC	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	ZAC	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	XCS	.9208	.9083	.9083	.9083	1.0000	.9917	.9958	.9875
5	YCS	1.4673	1.4414	1.4356	1.4364	1.0633	1.0964	1.1131	1.1080
6	ZCS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	XCDC	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	YCDC	3.9617	3.9617	3.9617	3.9617	3.9617	3.9617	3.9617	3.9617
9	ZCDC	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	XCRC	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	YCRC	3.9617	3.9617	3.9617	3.9617	3.9617	3.9617	3.9617	3.9617
12	ZCRC	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	XCM	1.1467	1.1220	1.1230	1.1260	1.2020	1.1859	1.1894	1.1786
14	YCM	1.4617	1.4194	1.4098	1.4108	.9808	1.0309	1.0561	1.0483
15	ZCM	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	XCRDL	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	YCRDL	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	ZCRDL	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	XCLDL	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	YCLDL	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
21	ZCLDL	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
22	XCRREO	-.0833	-.0833	-.0833	-.0833	-.0833	-.0833	-.0833	-.0833
23	YCRREO	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24	ZCRREO	.4167	.4167	.4167	.4167	.4167	.4167	.4167	.4167
25	XCLREO	-.0833	-.0833	-.0833	-.0833	-.0833	-.0833	-.0833	-.0833
26	YCLREO	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
27	ZCLREO	-.4167	-.4167	-.4167	-.4167	-.4167	-.4167	-.4167	-.4167
28	XCRCMA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
29	YCRCMA	3.7500	3.7500	3.7500	3.7500	3.7500	3.7500	3.7500	3.7500
30	ZCRCMA	.4167	.4167	.4167	.4167	.4167	.4167	.4167	.4167
31	XCLCMA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
32	YCLCMA	3.7500	3.7500	3.7500	3.7500	3.7500	3.7500	3.7500	3.7500
33	ZCLCMA	-.4167	-.4167	-.4167	-.4167	-.4167	-.4167	-.4167	-.4167
34	XCRCC	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
35	YCRCC	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
36	ZCRCC	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
37	XCRR	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
38	YCRR	3.9617	3.9617	3.9617	3.9617	3.9617	3.9617	3.9617	3.9617
39	ZCRR	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
40	XCLR	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
41	YCLR	3.9617	3.9617	3.9617	3.9617	3.9617	3.9617	3.9617	3.9617
42	ZCLR	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
43	XCSA	.5733	.5733	.5733	.5733	.5733	.5733	.5733	.5733
44	YCSA	1.4758	1.4758	1.4758	1.4758	1.2375	1.2375	1.2375	1.2375
45	ZCSA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
46	XCSCG	.3675	.3675	.3675	.3675	.3675	.3675	.3675	.3675
47	YCSCG	.9117	.9117	.9117	.9117	.4950	.4950	.4950	.4950
48	ZCSCG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
49	XCMCG	1.1467	1.1220	1.1230	1.1260	1.2020	1.1859	1.1894	1.1786
50	YCMCG	1.4617	1.4194	1.4098	1.4108	.9808	1.0309	1.0561	1.0483
51	ZCMCG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
52	XCSACG	.3675	.3675	.3675	.3675	.3675	.3675	.3675	.3675
53	YCSACG	.9117	.9117	.9117	.9117	.4950	.4950	.4950	.4950
54	ZCSACG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
55	XCWRDA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
56	YCWRDA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
57	ZCWRDA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
58	XCWRDR	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
59	YCWRDR	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
60	ZCWRDR	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
61	XCRSBR	1.0313	1.0313	1.0313	1.0313	1.0313	1.0313	1.0313	1.0313
62	YCRSBR	-.1142	-.1142	-.1142	-.1142	-.5308	-.5308	-.5308	-.5308
63	ZCRSBR	.6642	.6642	.6642	.6642	.6642	.6642	.6642	.6642
64	XCLSBR	1.0313	1.0313	1.0313	1.0313	1.0313	1.0313	1.0313	1.0313
65	YCLSBR	-.1142	-.1142	-.1142	-.1142	-.5308	-.5308	-.5308	-.5308
66	ZCLSBR	-.6642	-.6642	-.6642	-.6642	-.6642	-.6642	-.6642	-.6642
67	XCRCP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
68	YCRCP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
69	ZCRCP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
70	XCLCP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
71	YCLCP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
72	ZCLCP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
73	YSEAT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
74	XCP	.9080	.9080	.9080	.9080	.9980	.9980	.9980	.9980
75	YCP	4.4460	4.4460	4.4460	4.4460	4.4460	4.4460	4.4460	4.4460
76	ZCP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

		TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
SECTION 3 CONTAINS 14 ITEMS									
1	XA	-.6859	-.6859	-.6859	-.6859	-.6859	-.6859	-.6859	-.6859
2	YA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	ZA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	FDW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	FLW	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
6	FTW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	FCW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	VAO	0.0000	387.0000	755.0000	1011.0000	0.0000	377.0000	735.0000	1000.0000
9	MUDOT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	PDA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	QDA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	RDA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	TFAR	89.0000	93.5000	96.2000	91.3000	82.0000	81.0000	106.0000	91.3000
14	PMRS	925.9000	930.4000	934.6800	930.2600	931.2000	932.0000	929.4000	930.2600

		TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
SECTION 4 CONTAINS 6 ITEMS									
1	ARSAR	89.0000	89.0000	89.0000	89.0000	89.0000	89.0000	89.0000	89.0000
2	BRSAR	15.0000	15.0000	15.0000	15.0000	15.0000	15.0000	15.0000	15.0000
3	GRSAR	105.0000	105.0000	105.0000	105.0000	105.0000	105.0000	105.0000	105.0000
4	ALSAR	89.0000	89.0000	89.0000	89.0000	89.0000	89.0000	89.0000	89.0000
5	BLSAR	15.0000	15.0000	15.0000	15.0000	15.0000	15.0000	15.0000	15.0000
6	GLSAR	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000

		TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
SECTION 5 CONTAINS 5 ITEMS									
1	KX	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	KY	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	KZ	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	HUF	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	XSRTOL	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
SECTION 6 CONTAINS	3 ITEMS							
1 LDL0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2 LDL1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3 FADART	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

		TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
SECTION 7 CONTAINS 40 ITEMS									
1	IXXS	16.9000	16.9000	16.9000	16.9000	25.5000	25.5000	25.5000	25.5000
2	IXYS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	IXZS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	IYYS	19.0000	19.0000	19.0000	19.0000	28.5000	28.5000	28.5000	28.5000
5	IYZS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	IZZS	6.3000	6.3000	6.3000	6.3000	8.2000	8.2000	8.2000	8.2000
7	IXXM	11.9200	11.9200	11.9200	11.9200	11.9200	11.9200	11.9200	11.9200
8	IXYM	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	IXZM	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	IYYM	15.0400	15.0400	15.0400	15.0400	15.0400	15.0400	15.0400	15.0400
11	IYZM	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	IZZM	5.6900	5.6900	5.6900	5.6900	5.6900	5.6900	5.6900	5.6900
13	IXXSA	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000	4.0000
14	IXYSA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	IXZSA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	IYYSA	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000
17	IYZSA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	IZZSA	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
19	GWS	367.0000	367.0000	366.0000	363.0000	445.0000	451.0000	455.0000	453.0000
20	GWM	221.0000	224.0000	223.0000	220.0000	302.0000	308.0000	312.0000	310.0000
21	GWSA	143.0000	143.0000	143.0000	143.0000	143.0000	143.0000	143.0000	143.0000
22	GWURD	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
23	GWC	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
24	GWDC	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
25	GWRC	16.5000	16.5000	16.5000	16.5000	16.5000	16.5000	16.5000	16.5000
26	SS	7.5000	7.5000	7.5000	7.5000	7.5000	7.5000	7.5000	7.5000
27	SH	9.6000	9.6000	9.6000	9.6000	9.6000	9.6000	9.6000	9.6000
28	SSA	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
29	WX	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30	WY	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
31	WZ	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
32	RRARS	1.5450	1.5450	1.5450	1.5450	1.5450	1.5450	1.5450	1.5450
33	RRARM	1.7480	1.7480	1.7480	1.7480	1.7480	1.7480	1.7480	1.7480
34	RRARSA	1.3800	1.3800	1.3800	1.3800	1.3800	1.3800	1.3800	1.3800
35	CREW	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
36	TRAVEL	4.7000	4.7000	4.7000	4.7000	4.7000	4.7000	4.7000	4.7000
37	SCRENO	1.0000	.6600	.3300	0.0000	1.0000	.6600	.3300	0.0000
38	SCREN1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
39	SUN	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
40	CPCG	.8500	.8500	.8500	.8500	.8500	.8500	.8500	.8500

		TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
SECTION 8 CONTAINS 16 ITEMS									
1	KSDC	2000.0000	2000.0000	2000.0000	2000.0000	2000.0000	2000.0000	2000.0000	2000.0000
2	KSWRD	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	KSRC	2000.0000	2000.0000	2000.0000	2000.0000	2000.0000	2000.0000	2000.0000	2000.0000
4	ALTRO	6000.0000	6000.0000	6000.0000	6000.0000	6000.0000	6000.0000	6000.0000	6000.0000
5	SSDC	78.5400	78.5400	78.5400	78.5400	78.5400	78.5400	78.5400	78.5400
6	DODC	7.8531	7.8531	7.8531	7.8531	7.8531	7.8531	7.8531	7.8531
7	DORC	27.4889	27.4889	27.4889	27.4889	27.4889	27.4889	27.4889	27.4889
8	SC	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000
9	SWRD	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	UDP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	VDP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	WDP	-55.0000	-55.0000	-55.0000	-55.0000	-55.0000	-55.0000	-55.0000	-55.0000
13	FOSO	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	KSODC	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000
15	KSORC	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000	16.0000
16	TAUEXP	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000

		TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
SECTION 9 CONTAINS 10 ITEMS									
1	LWRDL	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	LDCL	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
3	LSLDC	12.0000	12.0000	12.0000	12.0000	12.0000	12.0000	12.0000	12.0000
4	LFL	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	LRISER	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000
6	LSLRC	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000
7	LSG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	CATSTK	6.0600	6.0600	6.0600	6.0600	6.0600	6.0600	6.0600	6.0600
9	DWRDCG	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
10	LRECOV	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000	14.0000

		TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
SECTION 10 CONTAINS		9 ITEMS							
1	TCI	.3270	.3080	.3130	.3190	.3130	.3040	.3260	.3200
2	TCU	.3270	.3080	.3130	.3190	.3130	.3040	.3260	.3200
3	TRI	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	TRRO	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	TDP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	TWRDI	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	TWRDRO	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	TSTOP	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000
9	PRERQ	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000

		TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
SECTION 11 CONTAINS		24 ITEMS							
1	STO	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	DTAIR	.0050	.0050	.0050	.0050	.0050	.0050	.0050	.0050
3	DTCI	.0010	.0010	.0010	.0010	.0010	.0010	.0010	.0010
4	DTSAR	.0010	.0010	.0010	.0010	.0010	.0010	.0010	.0010
5	DTDP	.0010	.0010	.0010	.0010	.0010	.0010	.0010	.0010
6	DTDE	.0010	.0010	.0010	.0010	.0010	.0010	.0010	.0010
7	DTWI	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	DTRCO	.0010	.0010	.0010	.0010	.0010	.0010	.0010	.0010
9	DTRCF	.0100	.0100	.0100	.0100	.0100	.0100	.0100	.0100
10	DTSHS	.0100	.0100	.0100	.0100	.0100	.0100	.0100	.0100
11	STAR	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
12	ALPHAT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
13	CNT	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
14	XTAR	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
15	ZTAR	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
16	CMO	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	PCP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
18	P0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	*0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
20	R0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
21	CLPMA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
22	CMPMA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
23	CNRMA	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24	RRC	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

		TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
SECTION 12 CONTAINS 12 ITEMS									
1	CX	404.2200	404.2200	404.2200	404.2200	404.2200	404.2200	404.2200	404.2200
2	XSLACK	.0830	.0830	.0830	.0830	.0830	.0830	.0830	.0830
3	SXP	33286.1900	33286.1900	33286.1900	33286.1900	33286.1900	33286.1900	33286.1900	33286.1900
4	SXN	33286.1900	33286.1900	33286.1900	33286.1900	33286.1900	33286.1900	33286.1900	33286.1900
5	CY	404.2200	404.2200	404.2200	404.2200	404.2200	404.2200	404.2200	404.2200
6	SY	33286.1900	33286.1900	33286.1900	33286.1900	33286.1900	33286.1900	33286.1900	33286.1900
7	CZ	166.4300	166.4300	166.4300	166.4300	166.4300	166.4300	166.4300	166.4300
8	ZSLACK	.1660	.1660	.1660	.1660	.1660	.1660	.1660	.1660
9	SZP	33286.1900	33286.1900	33286.1900	33286.1900	33286.1900	33286.1900	33286.1900	33286.1900
10	ZBOT	-.0740	-.0740	-.0740	-.0740	-.0740	-.0740	-.0740	-.0740
11	SZN1	17131.2900	17131.2900	17131.2900	17131.2900	17131.2900	17131.2900	17131.2900	17131.2900
12	SZN2	42484.3000	42484.3000	42484.3000	42484.3000	42484.3000	42484.3000	42484.3000	42484.3000

		TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
SECTION 13 CONTAINS 20 ITEMS									
1	XKSLIP	35000.0000	35000.0000	35000.0000	35000.0000	35000.0000	35000.0000	35000.0000	35000.0000
2	ZKSLIP	20000.0000	20000.0000	20000.0000	20000.0000	20000.0000	20000.0000	20000.0000	20000.0000
3	XCSLIP	200.0000	200.0000	200.0000	200.0000	200.0000	200.0000	200.0000	200.0000
4	ZCSLIP	200.0000	200.0000	200.0000	200.0000	200.0000	200.0000	200.0000	200.0000
5	UMSLIP	.0250	.0250	.0250	.0250	.0250	.0250	.0250	.0250
6	XYKTOR	261.7801	261.7801	261.7801	261.7801	261.7801	261.7801	261.7801	261.7801
7	XYCTOR	1.7452	1.7452	1.7452	1.7452	1.7452	1.7452	1.7452	1.7452
8	UMTUBE	.0250	.0250	.0250	.0250	.0250	.0250	.0250	.0250
9	FKTUBE	20000.0000	20000.0000	20000.0000	20000.0000	20000.0000	20000.0000	20000.0000	20000.0000
10	FCTUBE	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000	100.0000
11	POWER	.2500	.2500	.2500	.2500	.2500	.2500	.2500	.2500
12	SRCDEF	75000.0000	75000.0000	75000.0000	75000.0000	75000.0000	75000.0000	75000.0000	75000.0000
13	TUPLTH1	2.7800	2.7800	2.7800	2.7800	2.7800	2.7800	2.7800	2.7800
14	TUPLTH2	3.2800	3.2800	3.2800	3.2800	3.2800	3.2800	3.2800	3.2800
15	TUPLTH3	3.6600	3.6600	3.6600	3.6600	3.6600	3.6600	3.6600	3.6600
16	XCTCP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
17	YCTCP	3.7500	3.7500	3.7500	3.7500	3.7500	3.7500	3.7500	3.7500
18	ZCTCP	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
19	STNCEL	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
20	RAILNT	3.6600	3.6600	3.6600	3.6600	3.6600	3.6600	3.6600	3.6600

		TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
SECTION 14 CONTAINS	7 ITEMS								
1	THLAP1	.6100	.5960	.6060	.6200	.5980	.5930	.6230	.6210
2	THLAP2	1.6630	1.7630	3.5130	1.5830	1.5580	1.5970	1.7320	1.7070
3	ALT2	13000.0000	13000.0000	13000.0000	13000.0000	13000.0000	13000.0000	13000.0000	13000.0000
4	ALT1	6000.0000	6000.0000	6000.0000	6000.0000	6000.0000	6000.0000	6000.0000	6000.0000
5	TIMPGT	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000	3.0000
6	SMSEPF	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000	80.0000
7	SBRON	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000	6.0000

	TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
TABLE TCL	CONTAINS 25 POINTS							
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	.0100	.0100	.0100	.0100	.0100	.0100	.0100	.0100
3	.0200	.0200	.0200	.0200	.0200	.0200	.0200	.0200
4	.0300	.0300	.0300	.0300	.0300	.0300	.0300	.0300
5	.0400	.0400	.0400	.0400	.0400	.0400	.0400	.0400
6	.0500	.0500	.0500	.0500	.0500	.0500	.0500	.0500
7	.0600	.0600	.0600	.0600	.0600	.0600	.0600	.0600
8	.0700	.0700	.0700	.0700	.0700	.0700	.0700	.0700
9	.0800	.0800	.0800	.0800	.0800	.0800	.0800	.0800
10	.0900	.0900	.0900	.0900	.0900	.0900	.0900	.0900
11	.1000	.1000	.1000	.1000	.1000	.1000	.1000	.1000
12	.1100	.1100	.1100	.1100	.1100	.1100	.1100	.1100
13	.1200	.1200	.1200	.1200	.1200	.1200	.1200	.1200
14	.1300	.1300	.1300	.1300	.1300	.1300	.1300	.1300
15	.1400	.1400	.1400	.1400	.1400	.1400	.1400	.1400
16	.1500	.1500	.1500	.1500	.1500	.1500	.1500	.1500
17	.1600	.1600	.1600	.1600	.1600	.1600	.1600	.1600
18	.1700	.1700	.1700	.1700	.1700	.1700	.1700	.1700
19	.1800	.1800	.1800	.1800	.1800	.1800	.1800	.1800
20	.1900	.1900	.1900	.1900	.1900	.1900	.1900	.1900
21	.2000	.2000	.2000	.2000	.2000	.2000	.2000	.2000
22	.2100	.2100	.2100	.2100	.2100	.2100	.2100	.2100
23	.2200	.2200	.2200	.2200	.2200	.2200	.2200	.2200
24	.2300	.2300	.2300	.2300	.2300	.2300	.2300	.2300
25	.2500	.2500	.2500	.2500	.2500	.2500	.2500	.2500
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	777.0000	777.0000	777.0000	777.0000	777.0000	777.0000	777.0000	777.0000
3	1074.5000	1074.5000	1074.5000	1074.5000	1074.5000	1074.5000	1074.5000	1074.5000
4	1441.0000	1441.0000	1441.0000	1441.0000	1441.0000	1441.0000	1441.0000	1441.0000
5	1911.0000	1911.0000	1911.0000	1911.0000	1911.0000	1911.0000	1911.0000	1911.0000
6	2344.9000	2344.9000	2344.9000	2344.9000	2344.9000	2344.9000	2344.9000	2344.9000
7	2765.0000	2765.0000	2765.0000	2765.0000	2765.0000	2765.0000	2765.0000	2765.0000
8	2934.0000	2934.0000	2934.0000	2934.0000	2934.0000	2934.0000	2934.0000	2934.0000
9	2826.0000	2826.0000	2826.0000	2826.0000	2826.0000	2826.0000	2826.0000	2826.0000
10	2543.5000	2543.5000	2543.5000	2543.5000	2543.5000	2543.5000	2543.5000	2543.5000
11	2246.5000	2246.5000	2246.5000	2246.5000	2246.5000	2246.5000	2246.5000	2246.5000
12	2054.5000	2054.5000	2054.5000	2054.5000	2054.5000	2054.5000	2054.5000	2054.5000
13	1659.5000	1659.5000	1659.5000	1659.5000	1659.5000	1659.5000	1659.5000	1659.5000
14	1719.5000	1719.5000	1719.5000	1719.5000	1719.5000	1719.5000	1719.5000	1719.5000
15	1804.5000	1804.5000	1804.5000	1804.5000	1804.5000	1804.5000	1804.5000	1804.5000
16	1992.5000	1992.5000	1992.5000	1992.5000	1992.5000	1992.5000	1992.5000	1992.5000
17	2206.0000	2206.0000	2206.0000	2206.0000	2206.0000	2206.0000	2206.0000	2206.0000
18	2386.0000	2386.0000	2386.0000	2386.0000	2386.0000	2386.0000	2386.0000	2386.0000
19	2567.0000	2567.0000	2567.0000	2567.0000	2567.0000	2567.0000	2567.0000	2567.0000
20	2557.0000	2557.0000	2557.0000	2557.0000	2557.0000	2557.0000	2557.0000	2557.0000
21	2437.5000	2437.5000	2437.5000	2437.5000	2437.5000	2437.5000	2437.5000	2437.5000
22	2193.0000	2193.0000	2193.0000	2193.0000	2193.0000	2193.0000	2193.0000	2193.0000
23	959.0000	959.0000	959.0000	959.0000	959.0000	959.0000	959.0000	959.0000
24	624.5000	624.5000	624.5000	624.5000	624.5000	624.5000	624.5000	624.5000
25	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
TABLE TCR	CONTAINS 25 POINTS							
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	.0100	.0100	.0100	.0100	.0100	.0100	.0100	.0100
3	.0200	.0200	.0200	.0200	.0200	.0200	.0200	.0200
4	.0300	.0300	.0300	.0300	.0300	.0300	.0300	.0300
5	.0400	.0400	.0400	.0400	.0400	.0400	.0400	.0400
6	.0500	.0500	.0500	.0500	.0500	.0500	.0500	.0500
7	.0600	.0600	.0600	.0600	.0600	.0600	.0600	.0600
8	.0700	.0700	.0700	.0700	.0700	.0700	.0700	.0700
9	.0800	.0800	.0800	.0800	.0800	.0800	.0800	.0800
10	.0900	.0900	.0900	.0900	.0900	.0900	.0900	.0900
11	.1000	.1000	.1000	.1000	.1000	.1000	.1000	.1000
12	.1100	.1100	.1100	.1100	.1100	.1100	.1100	.1100
13	.1200	.1200	.1200	.1200	.1200	.1200	.1200	.1200
14	.1300	.1300	.1300	.1300	.1300	.1300	.1300	.1300
15	.1400	.1400	.1400	.1400	.1400	.1400	.1400	.1400
16	.1500	.1500	.1500	.1500	.1500	.1500	.1500	.1500
17	.1600	.1600	.1600	.1600	.1600	.1600	.1600	.1600
18	.1700	.1700	.1700	.1700	.1700	.1700	.1700	.1700
19	.1800	.1800	.1800	.1800	.1800	.1800	.1800	.1800
20	.1900	.1900	.1900	.1900	.1900	.1900	.1900	.1900
21	.2000	.2000	.2000	.2000	.2000	.2000	.2000	.2000
22	.2100	.2100	.2100	.2100	.2100	.2100	.2100	.2100
23	.2200	.2200	.2200	.2200	.2200	.2200	.2200	.2200
24	.2300	.2300	.2300	.2300	.2300	.2300	.2300	.2300
25	.2500	.2500	.2500	.2500	.2500	.2500	.2500	.2500
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	777.0000	777.0000	777.0000	777.0000	777.0000	777.0000	777.0000	777.0000
3	1074.5000	1074.5000	1074.5000	1074.5000	1074.5000	1074.5000	1074.5000	1074.5000
4	1441.0000	1441.0000	1441.0000	1441.0000	1441.0000	1441.0000	1441.0000	1441.0000
5	1911.0000	1911.0000	1911.0000	1911.0000	1911.0000	1911.0000	1911.0000	1911.0000
6	2344.9000	2344.9000	2344.9000	2344.9000	2344.9000	2344.9000	2344.9000	2344.9000
7	2765.0000	2765.0000	2765.0000	2765.0000	2765.0000	2765.0000	2765.0000	2765.0000
8	2934.0000	2934.0000	2934.0000	2934.0000	2934.0000	2934.0000	2934.0000	2934.0000
9	2826.0000	2826.0000	2826.0000	2826.0000	2826.0000	2826.0000	2826.0000	2826.0000
10	2543.5000	2543.5000	2543.5000	2543.5000	2543.5000	2543.5000	2543.5000	2543.5000
11	2246.5000	2246.5000	2246.5000	2246.5000	2246.5000	2246.5000	2246.5000	2246.5000
12	2054.5000	2054.5000	2054.5000	2054.5000	2054.5000	2054.5000	2054.5000	2054.5000
13	1659.5000	1659.5000	1659.5000	1659.5000	1659.5000	1659.5000	1659.5000	1659.5000
14	1719.5000	1719.5000	1719.5000	1719.5000	1719.5000	1719.5000	1719.5000	1719.5000
15	1804.5000	1804.5000	1804.5000	1804.5000	1804.5000	1804.5000	1804.5000	1804.5000
16	1992.5000	1992.5000	1992.5000	1992.5000	1992.5000	1992.5000	1992.5000	1992.5000
17	2206.0000	2206.0000	2206.0000	2206.0000	2206.0000	2206.0000	2206.0000	2206.0000
18	2386.0000	2386.0000	2386.0000	2386.0000	2386.0000	2386.0000	2386.0000	2386.0000
19	2567.0000	2567.0000	2567.0000	2567.0000	2567.0000	2567.0000	2567.0000	2567.0000
20	2557.0000	2557.0000	2557.0000	2557.0000	2557.0000	2557.0000	2557.0000	2557.0000
21	2437.5000	2437.5000	2437.5000	2437.5000	2437.5000	2437.5000	2437.5000	2437.5000
22	2193.0000	2193.0000	2193.0000	2193.0000	2193.0000	2193.0000	2193.0000	2193.0000
23	959.0000	959.0000	959.0000	959.0000	959.0000	959.0000	959.0000	959.0000
24	624.5000	624.5000	624.5000	624.5000	624.5000	624.5000	624.5000	624.5000
25	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
TABLE TLR	CONTAINS 25 POINTS							
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	.0100	.0100	.0100	.0100	.0100	.0100	.0100	.0100
3	.0200	.0200	.0200	.0200	.0200	.0200	.0200	.0200
4	.0300	.0300	.0300	.0300	.0300	.0300	.0300	.0300
5	.0400	.0400	.0400	.0400	.0400	.0400	.0400	.0400
6	.0500	.0500	.0500	.0500	.0500	.0500	.0500	.0500
7	.0600	.0600	.0600	.0600	.0600	.0600	.0600	.0600
8	.0700	.0700	.0800	.0800	.0700	.0700	.0800	.0700
9	.0800	.0800	.1000	.1000	.0800	.0800	.1000	.0800
10	.0900	.0900	.1200	.1200	.0900	.0900	.1200	.1000
11	.1000	.1100	.1300	.1300	.1000	.1000	.1300	.1200
12	.1200	.1300	.1400	.1400	.1200	.1200	.1400	.1300
13	.1300	.1400	.1500	.1500	.1300	.1300	.1500	.1500
14	.1400	.1500	.1600	.1700	.1400	.1400	.1600	.1700
15	.1500	.1600	.1700	.1800	.1500	.1500	.1700	.1800
16	.1600	.1700	.1800	.1900	.1600	.1600	.1800	.1900
17	.1800	.1800	.1900	.2000	.1800	.1800	.1900	.2000
18	.1900	.1900	.2000	.2100	.1900	.1900	.2000	.2100
19	.2000	.2000	.2100	.2200	.2000	.2000	.2100	.2200
20	.2100	.2100	.2200	.2300	.2100	.2100	.2200	.2300
21	.2200	.2250	.2300	.2400	.2200	.2200	.2300	.2400
22	.2300	.2300	.2400	.2500	.2300	.2300	.2400	.2500
23	.2400	.2400	.2500	.2600	.2400	.2400	.2500	.2600
24	.2500	.2500	.2600	.2700	.2500	.2500	.2600	.2700
25	.2600	.2590	.2700	.2720	.2600	.2600	.2700	.2740
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	1834.0000	1834.0000	1834.0000	1834.0000	1834.0000	1834.0000	1834.0000	1833.0000
3	1739.0000	1738.0000	1737.0000	1737.0000	1738.0000	1738.0000	1737.0000	1737.0000
4	1749.0000	1749.0000	1748.0000	1748.0000	1749.0000	1749.0000	1748.0000	1748.0000
5	1760.0000	1760.0000	1759.0000	1759.0000	1760.0000	1760.0000	1759.0000	1759.0000
6	1771.0000	1771.0000	1771.0000	1770.0000	1771.0000	1771.0000	1771.0000	1770.0000
7	1782.0000	1782.0000	1782.0000	1782.0000	1782.0000	1782.0000	1782.0000	1781.0000
8	1781.0000	1781.0000	1780.0000	1780.0000	1781.0000	1781.0000	1780.0000	1780.0000
9	1780.0000	1780.0000	1778.0000	1778.0000	1780.0000	1780.0000	1778.0000	1780.0000
10	1779.0000	1780.0000	1776.0000	1776.0000	1779.0000	1779.0000	1776.0000	1778.0000
11	1779.0000	1778.0000	1775.0000	1775.0000	1779.0000	1779.0000	1775.0000	1776.0000
12	1777.0000	1776.0000	1770.0000	1770.0000	1777.0000	1777.0000	1770.0000	1775.0000
13	1776.0000	1771.0000	1765.0000	1765.0000	1776.0000	1776.0000	1765.0000	1765.0000
14	1771.0000	1766.0000	1760.0000	1755.0000	1771.0000	1771.0000	1760.0000	1755.0000
15	1766.0000	1761.0000	1755.0000	1750.0000	1766.0000	1766.0000	1755.0000	1750.0000
16	1760.0000	1755.0000	1750.0000	1708.0000	1760.0000	1760.0000	1750.0000	1708.0000
17	1750.0000	1750.0000	1708.0000	1660.0000	1750.0000	1750.0000	1708.0000	1660.0000
18	1708.0000	1708.0000	1660.0000	1603.0000	1708.0000	1708.0000	1660.0000	1603.0000
19	1661.0000	1661.0000	1603.0000	1354.0000	1661.0000	1661.0000	1603.0000	1353.0000
20	1604.0000	1604.0000	1354.0000	911.0000	1604.0000	1604.0000	1354.0000	911.0000
21	1354.0000	1354.0000	911.0000	469.0000	1354.0000	1354.0000	911.0000	469.0000
22	911.0000	911.0000	469.0000	26.0000	911.0000	911.0000	469.0000	26.0000
23	469.0000	469.0000	26.0000	14.0000	469.0000	469.0000	26.0000	15.0000
24	26.0000	26.0000	13.0000	2.0000	26.0000	26.0000	13.0000	4.0000
25	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
TABLE TRR	CONTAINS 25 POINTS							
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	.0100	.0100	.0100	.0100	.0100	.0100	.0100	.0100
3	.0200	.0200	.0200	.0200	.0200	.0200	.0200	.0200
4	.0300	.0300	.0300	.0300	.0300	.0300	.0300	.0300
5	.0400	.0400	.0400	.0400	.0400	.0400	.0400	.0400
6	.0500	.0500	.0500	.0500	.0500	.0500	.0500	.0500
7	.0600	.0600	.0600	.0600	.0600	.0600	.0600	.0600
8	.0700	.0700	.0400	.0800	.0700	.0700	.0800	.0700
9	.0800	.0800	.1000	.1000	.0800	.0800	.1000	.0800
10	.0900	.0900	.1200	.1200	.0900	.0900	.1200	.1000
11	.1000	.1100	.1300	.1300	.1000	.1000	.1300	.1200
12	.1200	.1300	.1400	.1400	.1200	.1200	.1400	.1300
13	.1300	.1400	.1500	.1500	.1300	.1300	.1500	.1500
14	.1400	.1500	.1600	.1700	.1400	.1400	.1600	.1700
15	.1500	.1600	.1700	.1800	.1500	.1500	.1700	.1800
16	.1600	.1700	.1800	.1900	.1600	.1600	.1800	.1900
17	.1800	.1800	.1900	.2000	.1800	.1800	.1900	.2000
18	.1900	.1900	.2000	.2100	.1900	.1900	.2000	.2100
19	.2000	.2000	.2100	.2200	.2000	.2000	.2100	.2200
20	.2100	.2100	.2200	.2300	.2100	.2100	.2200	.2300
21	.2200	.2200	.2300	.2400	.2200	.2200	.2300	.2400
22	.2300	.2300	.2400	.2500	.2300	.2300	.2400	.2500
23	.2400	.2400	.2500	.2600	.2400	.2400	.2500	.2600
24	.2500	.2500	.2600	.2700	.2500	.2500	.2600	.2700
25	.2600	.2590	.2700	.2720	.2600	.2600	.2700	.2740
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	3669.0000	3669.0000	3667.0000	3667.0000	3669.0000	3669.0000	3667.0000	3667.0000
3	3475.0000	3475.0000	3474.0000	3474.0000	3475.0000	3475.0000	3474.0000	3474.0000
4	3498.0000	3498.0000	3496.0000	3496.0000	3498.0000	3498.0000	3496.0000	3496.0000
5	3520.0000	3520.0000	3519.0000	3519.0000	3520.0000	3520.0000	3519.0000	3518.0000
6	3542.0000	3542.0000	3541.0000	3541.0000	3542.0000	3542.0000	3541.0000	3541.0000
7	3564.0000	3565.0000	3563.0000	3563.0000	3564.0000	3564.0000	3563.0000	3563.0000
8	3563.0000	3563.0000	3560.0000	3559.0000	3563.0000	3563.0000	3560.0000	3561.0000
9	3561.0000	3561.0000	3556.0000	3556.0000	3561.0000	3561.0000	3556.0000	3559.0000
10	3559.0000	3559.0000	3552.0000	3552.0000	3559.0000	3559.0000	3552.0000	3555.0000
11	3557.0000	3555.0000	3550.0000	3550.0000	3557.0000	3557.0000	3550.0000	3552.0000
12	3553.0000	3552.0000	3540.0000	3540.0000	3553.0000	3553.0000	3540.0000	3550.0000
13	3552.0000	3541.0000	3530.0000	3530.0000	3552.0000	3552.0000	3530.0000	3530.0000
14	3541.0000	3531.0000	3520.0000	3509.0000	3541.0000	3541.0000	3520.0000	3509.0000
15	3531.0000	3521.0000	3510.0000	3499.0000	3531.0000	3531.0000	3510.0000	3499.0000
16	3521.0000	3511.0000	3499.0000	3415.0000	3521.0000	3521.0000	3499.0000	3415.0000
17	3501.0000	3501.0000	3416.0000	3320.0000	3501.0000	3501.0000	3416.0000	3319.0000
18	3417.0000	3417.0000	3320.0000	3206.0000	3417.0000	3417.0000	3320.0000	3206.0000
19	3321.0000	3321.0000	3206.0000	2707.0000	3321.0000	3321.0000	3206.0000	2707.0000
20	3207.0000	3208.0000	2707.0000	1822.0000	3207.0000	3207.0000	2707.0000	1822.0000
21	2708.0000	2708.0000	1822.0000	937.0000	2708.0000	2708.0000	1822.0000	937.0000
22	1823.0000	1823.0000	937.0000	52.0000	1823.0000	1823.0000	937.0000	52.0000
23	938.0000	938.0000	52.0000	29.0000	938.0000	938.0000	52.0000	30.0000
24	52.0000	52.0000	26.0000	5.0000	52.0000	52.0000	26.0000	9.0000
25	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
TABLE CDC	CONTAINS 2 POINTS							
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	1000.0000	1000.0000	1000.0000	1000.0000	1000.0000	1000.0000	1000.0000	1000.0000
1	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

	TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
TABLE CNDC	CONTAINS 2 POINTS							
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	180.0000	180.0000	180.0000	180.0000	180.0000	180.0000	180.0000	180.0000
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
TABLE CTOC	CONTAINS 2 POINTS							
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	180.0000	180.0000	180.0000	180.0000	180.0000	180.0000	180.0000	180.0000
1	.7550	.7550	.7550	.7550	.7550	.7550	.7550	.7550
2	.7550	.7550	.7550	.7550	.7550	.7550	.7550	.7550

	TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
TABLE CNRC	CONTAINS 11 POINTS							
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000
3	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000
4	15.0000	15.0000	15.0000	15.0000	15.0000	15.0000	15.0000	15.0000
5	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000
6	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000
7	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000
8	35.0000	35.0000	35.0000	35.0000	35.0000	35.0000	35.0000	35.0000
9	37.0000	37.0000	37.0000	37.0000	37.0000	37.0000	37.0000	37.0000
10	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000
11	180.0000	180.0000	180.0000	180.0000	180.0000	180.0000	180.0000	180.0000
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	-.0200	-.0200	-.0200	-.0200	-.0200	-.0200	-.0200	-.0200
3	-.0300	-.0300	-.0300	-.0300	-.0300	-.0300	-.0300	-.0300
4	-.0100	-.0100	-.0100	-.0100	-.0100	-.0100	-.0100	-.0100
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	.0300	.0300	.0300	.0300	.0300	.0300	.0300	.0300
7	.0700	.0700	.0700	.0700	.0700	.0700	.0700	.0700
8	.1300	.1300	.1300	.1300	.1300	.1300	.1300	.1300
9	.1800	.1800	.1800	.1800	.1800	.1800	.1800	.1800
10	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
11	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000

	TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
TABLE CTRC	CONTAINS 11 POINTS							
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000	5.0000
3	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000	10.0000
4	15.0000	15.0000	15.0000	15.0000	15.0000	15.0000	15.0000	15.0000
5	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000	20.0000
6	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000	25.0000
7	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000	30.0000
8	35.0000	35.0000	35.0000	35.0000	35.0000	35.0000	35.0000	35.0000
9	37.0000	37.0000	37.0000	37.0000	37.0000	37.0000	37.0000	37.0000
10	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000	75.0000
11	180.0000	180.0000	180.0000	180.0000	180.0000	180.0000	180.0000	180.0000
1	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
2	1.5200	1.5200	1.5200	1.5200	1.5200	1.5200	1.5200	1.5200
3	1.5400	1.5400	1.5400	1.5400	1.5400	1.5400	1.5400	1.5400
4	1.5400	1.5400	1.5400	1.5400	1.5400	1.5400	1.5400	1.5400
5	1.5200	1.5200	1.5200	1.5200	1.5200	1.5200	1.5200	1.5200
6	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000	1.5000
7	1.4600	1.4600	1.4600	1.4600	1.4600	1.4600	1.4600	1.4600
8	1.3750	1.3750	1.3750	1.3750	1.3750	1.3750	1.3750	1.3750
9	1.3250	1.3250	1.3250	1.3250	1.3250	1.3250	1.3250	1.3250
10	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
11	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
TABLE TOEFF1 CONTAINS 2 POINTS								
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	1000.0000	1000.0000	1000.0000	1000.0000	1000.0000	1000.0000	1000.0000	1000.0000
1	.6330	.4260	.3930	.3510	.7090	.6990	.3860	.5000
2	.6330	.4260	.3930	.3510	.7090	.6990	.3860	.5000

	TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
TABLE TRSRLS	CONTAINS	2 POINTS						
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	500.0000	500.0000	500.0000	600.0000	500.0000	500.0000	500.0000	600.0000
1	1.6000	.4700	.6340	.2700	1.0930	.4090	.3150	.2890
2	1.6000	.4700	.6340	.2700	1.0930	.4090	.3150	.2890

		TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
TABLE	TRLSFI	CONTAINS	2 POINTS						
1		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2		500.0000	500.0000	500.0000	600.0000	500.0000	500.0000	500.0000	600.0000
1		1.6100	.7890	.7750	.5480	2.7360	1.5860	.5350	.4850
2		1.6100	.7890	.7750	.5480	2.7360	1.5860	.5350	.4850

	TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
TABLE COORD	CONTAINS 2 POINTS							
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000	-1.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
TABLE TWRD	CONTAINS	2 POINTS						
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	-.2400	-.2400	-.2400	-.2400	-.2400	-.2400	-.2400	-.2400
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
TABLE VCSB CONTAINS 6 POINTS								
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	1.9267	1.9267	1.9267	1.9267	1.9267	1.9267	1.9267	1.9267
3	3.5267	3.5267	3.5267	3.5267	3.5267	3.5267	3.5267	3.5267
4	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
5	1.9267	1.9267	1.9267	1.9267	1.9267	1.9267	1.9267	1.9267
6	3.5267	3.5267	3.5267	3.5267	3.5267	3.5267	3.5267	3.5267
1	.1458	.1458	.1458	.1458	.1458	.1458	.1458	.1458
2	.1458	.1458	.1458	.1458	.1458	.1458	.1458	.1458
3	.1458	.1458	.1458	.1458	.1458	.1458	.1458	.1458
4	-.1458	-.1458	-.1458	-.1458	-.1458	-.1458	-.1458	-.1458
5	-.1458	-.1458	-.1458	-.1458	-.1458	-.1458	-.1458	-.1458
6	-.1458	-.1458	-.1458	-.1458	-.1458	-.1458	-.1458	-.1458

		TAPE1	TAPE2	TAPE3	TAPE4	TAPE5	TAPE6	TAPE7	TAPE8
AERODYNAMIC COEFFICIENTS FILE CONTAINS 12 TABLES									
1	CXS	1	1	1	1	1	1	1	1
2	CYS	2	2	2	2	2	2	2	2
3	CZS	3	3	3	3	3	3	3	3
4	CLS	4	4	4	4	4	4	4	4
5	CMS	5	5	5	5	5	5	5	5
6	CNS	6	6	6	6	6	6	6	6
7	CXM	21	21	21	21	21	21	21	21
8	CYM	22	22	22	22	22	22	22	22
9	CZM	23	23	23	23	23	23	23	23
10	CLM	24	24	24	24	24	24	24	24
11	CMM	25	25	25	25	25	25	25	25
12	CNM	26	26	26	26	26	26	26	26

```
      PROGRAM COMPARE(INPUT,OUTPUT,TAPE1,TAPE2,TAPE3,TAPE4,TAPE5,TAPE6,
     1 TAPE7,TAPE8,TAPE9,TAPE10)
C*****************************************************************
C*                                                               *
C* THIS PROGRAM WILL READ UP TO 10 ICARUS PROGRAM FORMATTED INPUT DATA *
C* FILES AND PRINT THE INDIVIDUAL PARAMETERS IN A COLUMN BY TAPE NUMBER *
C* FORMAT FOR VISUAL COMPARISON PURPOSES.  AN OPTION IS ALSO AVAILABLE *
C* THAT WILL CALCULATE THE AVERAGE OF EACH INDIVIDUAL SECTION PARAMETER. *
C* THE PROGRAM VARIABLES NTAPES AND IAVG MUST BE SPECIFIED BEFORE    *
C* COMPILATION OF THIS PROGRAM.                                      *
C* THE SEQUENCE AND NUMBER OF PARAMETERS ARE DETERMINED FROM TAPE1.  *
C* ALL OTHER TAPES ARE ASSUMED TO HAVE THIS SAME SEQUENCE AND NUMBER OF *
C* PARAMETERS.                                                       *
C*                                                                   *
C*****************************************************************
      DIMENSION ITITLE(8),IVAR(12,4),IVAL(12,50),AVAL(12,50),NTAPE(10)

      DATA (NTAPE(I),I=1,10)/7H  TAPE1,7H  TAPE2,7H  TAPE3,7H  TAPE4,
     1 7H  TAPE5,7H  TAPE6,7H  TAPE7,7H  TAPE8,7H  TAPE9,7H TAPE10/
      DATA NAVG/7HAVERAGE/

C NTAPES IS THE NUMBER OF INPUT DATA TAPES TO BE READ (1 - 10)
      NTAPES = 4
C IAVG IS THE OPTION TO CALCULATE THE AVERAGE OF EACH INDIVIDUAL SECTION
C PARAMATER.
C         0 = DO NOT CALCULATE THE AVERAGE
C         1 = CALCULATE AND PRINT THE AVERAGE
      IAVG = 0

C SKIP START LINE
      DO 10 I=1,NTAPES
   10 READ(I,1000) IDUM
C READ AND PRINT TITLES
      PRINT 2000
      DO 20 I=1,NTAPES
      READ(I,1100) (ITITLE(J),J=1,8)
      PRINT 2100,I,(ITITLE(J),J=1,8)
      READ(I,1100) (ITITLE(J),J=1,8)
   20 PRINT 2200,(ITITLE(J),J=1,8)
C READ AND PRINT FLAGS
      PRINT 2300,(NTAPE(I),I=1,NTAPES)
      PRINT 2000
      N = 0
      DO 40 K=1,12
      DO 30 I=1,NTAPES
   30 READ(I,1200) ((IVAR(I,M),IVAL(I,M)),M=1,4)
      DO 40 M=1,4
      IF(IVAR(1,M) .EQ. 8H          ) GO TO 40
      N = N+1
      PRINT 2400,N,IVAR(1,M),(IVAL(I,M),I=1,NTAPES)
   40 CONTINUE
C READ AND PRINT SECTIONS
   50 READ(1,1300) IDUM
      IF(IDUM .NE. 7HSECTION) GO TO 110
      BACKSPACE 1
      READ(1,1300) IDUM,NUM
      BACKSPACE 1
```

```
      IF(IAVG .EQ. 0) PRINT 2300,(N  RE(I),I=1,NTAPES)
      IF(IAVG .NE. 0) PRINT 2300,(N  P  ),I=1,NTAPES),NAVG
      PRINT 2800
      N = 0
      READ(1,1100) (ITITLE(J),J=1,8)
      PRINT 2500,(ITITLE(J),J=1,8)
      DO 60 I=2,NTAPES
   60 READ(I,1000) IDUM
      LINES = ((NUM-1)/3) + 1
      DO 100 M=1,LINES
      DO 70 I=1,NTAPES
   70 READ(I,1400) ((IVAR(I,M),AVAL(I,M)),M=1,3)
      DO 100 M=1,3
      IF(IVAR(I,M) .EQ. 7H        ) GO TO 100
      N = N+1
      IF(IAVG .EQ. 0) GO TO 90
      SUM = 0.0
      DO 80 I=1,NTAPES
   80 SUM = SUM+AVAL(I,M)
      AVG = SUM/NTAPES
      PRINT 2600,N,IVAR(I,M),(AVAL(I,M),I=1,NTAPES),AVG
      GO TO 100
   90 PRINT 2600,N,IVAR(I,M),(AVAL(I,M),I=1,NTAPES)
  100 CONTINUE
      GO TO 50
C READ AND PRINT TABLES
  110 BACKSPACE 1
  120 READ(1,1500) IDUM,INAM
      IF(IDUM .NE. 5HTABLE) GO TO 160
      NL = 2
      IF(INAM .EQ. 4HVCSR) NL = 3
      BACKSPACE 1
      READ(1,1500) IDUM,INAM,NUM
      BACKSPACE 1
      PRINT 2300,(NTAPE(I),I=1,NTAPES)
      PRINT 2800
      READ(1,1100) (ITITLE(J),J=1,8)
      PRINT 2500,(ITITLE(J),J=1,8)
      DO 130 I=2,NTAPES
  130 READ(I,1000) IDUM
      DO 150 M=1,NL
      N = 0
      DO 140 I=1,NTAPES
  140 READ(I,1600) (AVAL(I,M),M=1,NUM)
      DO 150 M=1,NUM
      N = N+1
  150 PRINT 2700,N,(AVAL(I,M),I=1,NTAPES)
      GO TO 120
C READ AND PRINT AERODYNAMIC COEFFICIENT TABLE NAMES AND SEQUENCE NUMBERS
  160 PRINT 2300,(NTAPE(I),I=1,NTAPES)
      PRINT 2800
      N = 0
      BACKSPACE 1
      READ(1,1100) (ITITLE(J),J=1,8)
      PRINT 2500,(ITITLE(J),J=1,8)
      DO 170 I=2,NTAPES
```

```
115                 N = N+1
                    READ(1,1700) IVAR(K,1),IVAL(K,
                    DO 190 I=2,NTAPES
                180 READ(I,1800) IVAL(K,I)
120             190 PRINT 2400,N,IVAR(K,1),(IVAL(K,I),I=1,NTAPES)
                1000 FORMAT(A7)
                1100 FORMAT(8A10)
                1200 FORMAT(A8,I2,3(10X,A8,I2))
                1300 FORMAT(A7,13X,I3)
125             1400 FORMAT(A7,3X,F10.4,2(10X,A7,3X,F10.4))
                1500 FORMAT(A5,1X,A7,10X,I3)
                1600 FORMAT(8F10.4)
                1700 FORMAT(A7,1X,I2)
                1800 FORMAT(8X,I2)
130             2000 FORMAT(1H1)
                2100 FORMAT(1H0,'TAPE',I2,' = ',8A10)
                2200 FORMAT(1H ,9X,8A10)
                2300 FORMAT(1H1,19X,A7,10(4X,A7))
                2400 FORMAT(1H ,I3,2X,A10,10(1X,I10))
135             2500 FORMAT(1H ,8A10)
                2600 FORMAT(1H ,I3,2X,A10,11(1X,F10.4))
                2700 FORMAT(1H ,I3,2X,10X,10(1X,F10.4))
                2800 FORMAT(1H )
                     END
```